A Generative Model of Conspicuous Consumption and Status Signaling

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Abstract

Status signaling drives human behavior and the allocation of scarce resources such as mating opportunities, yet the generative mechanisms governing how specific goods, signals, or behaviors acquire prestige remain a puzzle. Classical frameworks, such as Costly Signaling Theory, explain stable equilibria but struggle to explain how semiotic meaning changes based on context or drifts dynamically over time. In this work, we propose a computational theory of status grounded in the theory of appropriateness, positing that status symbols emerge endogenously through a feedback loop of social observation and predictive pattern completion. We validate this theory using multi-agent simulations of Large Language Models (LLMs) with the Concordia framework. By experimentally manipulating social visibility within naturalistic agent daily routines, our model suggests that social interactions transform functional demand into status-seeking behavior. We observe the emergence of price run-ups and positive price elasticity (Veblen effects) for both real-world luxury items and procedurally generated synthetic goods, ruling out pretraining bias as the sole driver. This work provides a generative bridge between micro-level cognition and macro-level economic and sociological phenomena, offering a new methodology for forecasting how cultural conventions emerge from interaction.

Keywords: Social cognition, economics, signaling, decision-making

Introduction

Status signaling fundamentally drives human behavior, mediating the allocation of scarce resources such as attention, allies, and mating opportunities (Grafen, 1990; Zahavi, 1975). Beyond resource competition, these displays serve a semiotic function, acting as a classification system that allows individuals to infer the latent characteristics of others (Bourdieu, 1979; Jordan et al., 2016; Simmel, 1904; Spence, 1978; Veblen & Howells, 1899). Additionally, modern evolutionary accounts suggest that these signals also facilitate cultural learning by helping individuals identify prestigious models to imitate (Henrich, 2015; Henrich & Gil-White, 2001). However, the generative mechanisms governing how specific goods or behaviors acquire prestige remain a puzzle. Why do some goods become potent status symbols while others fade, and why do semiotic meanings shift so dynamically across cultures?

Current theoretical frameworks offer incomplete explanations. The rational-choice theory of human behavior struggles to explain why status goods frequently exhibit upward-sloping demand curves (Veblen effects) (Bagwell & Bernheim, 1996; Becker, 1976; Varian, 2014; Veblen & Howells, 1899). Costly Signaling Theory (CST) explains this conspicuous consumption by treating expenditure as a credible signal of status because the cost is hard to fake for low status individuals (Gintis et al., 2001; Grafen, 1990; Miller, 2001; Zahavi, 1975). However, even though CST explains why costly signals are honest and have stable equilibria, high production cost is neither necessary or sufficient to create a status signal (Lachmann et al., 2001).

Research on neutral markers demonstrates that nearly costless behaviors, like accents and religious markings, can emerge as reliable social signals (Barker et al., 2019; Cohen, 2012; Ghezae et al., 2024; Samarasinghe et al., 2019; Tajfel et al., 1971; Tibbetts & Dale, 2004). Extensive research in cultural evolution and anthropology further indicates that humans are biologically predisposed to imitate others, leading individuals to adopt the behaviors and arbitrary rituals of high-status models (Chudek et al., 2012; Henrich & Broesch, 2011; Henrich & Gil-White, 2001; Lyons & Keil, 2013; Simler & Hanson, 2017). These findings demonstrate that signal adoption does not depend on understanding functional utility or production cost, but rather on social learning heuristics tuned for environments in which most useful knowledge is opaque and culturally inherited (Henrich, 2015). Moreover, expensive goods frequently lose their signaling power over time as trends fade or become accessible to the 'wrong' groups (Berger & Heath, 2008; Bourdieu, 1979; Leibenstein, 1950; Pesendorfer, 1995; Simmel, 1904). These dynamics are hard to capture in CST models, which rely on exogenous payoff structures and struggle with equilibrium selection (Bowles, 1998). A unified model of signaling must therefore explain why costly signals sometimes work, why cheap signals often work, and why trends can shift rapidly as conventions change.

Thus, we propose a unified computational theory of status grounded in the theory of appropriateness, positing that status symbols emerge endogenously through a feedback loop of social observation and imitation via predictive pattern completion (**leibo2025norms**; Bowles, 1998; Leibo et al., 2024). Building on sociological frameworks like Bourdieu's concept of habitus—an intuitive sense for the "rules of the game" (Bourdieu, 1979)—we model humans not as utility maximizers, but as culturally trained generative models. In this view, signals acquire value through social diffusion: individuals observe peers, update expectations about what "people like

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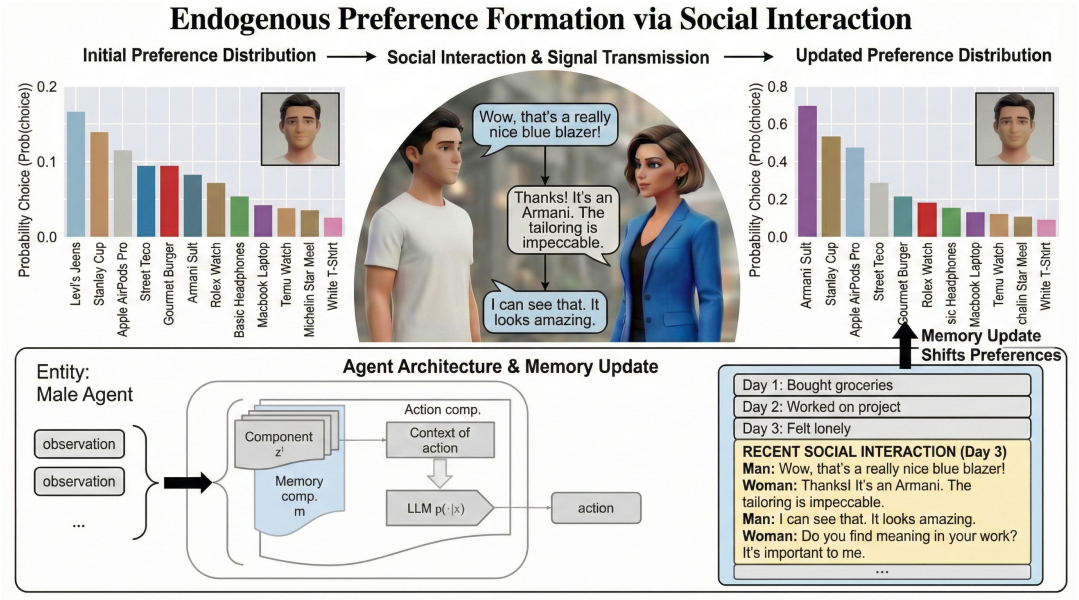

Figure 1: Endogenous preference formation. The figure illustrates how status preferences emerge dynamically through agent-to-agent interaction rather than hard-coded utility functions.

us" do, and imitate the signaling behaviors that align with that shared context. This process closely mirrors experimentally documented findings showing that humans often engage in "prestige-biased imitation," blindly copying the arbitrary symbols associated with successful individuals (Henrich & Broesch, 2011; Henrich & Gil-White, 2001). Thus, the binding constraint for a behavior to acquire status meaning is not production cost but **semiotic appropriateness**—how observers interpret a signaling behavior given precedent, social role, context, and shared cultural expectations. Cost can contribute to perceived appropriateness—but so can aesthetic form, identity alignment, and the weight of prior examples.

We formalize this via a **Conjecture: Social Exposure Increases Signaling through the Weight of Precedent:** Let a_s be a status signaling action and m_s be memories of social exposure to that signal. We posit that observing others' behaviors in context c increases the counterfactual weight of precedent, such that the probability of signaling in c is higher with social exposure than without:

$$p(a_s|c, m_s) > p(a_s|c)$$

This conjecture aligns with cultural evolution research showing that humans use social imitation to transmit behaviors—even when the functional purpose of those actions remains opaque (Henrich, 2015). By incorporating memories of others using a signal, agents update their internal 'logic of appropriateness' regarding which behaviors are appropriate for a context such as which goods they should buy. To demonstrate the utility and generative properties of our model, we simulate a society of 50 generative agents using the Concordia framework (Vezhnevets et al., 2023, 2025), initialized with diverse personas and mixed wealth distributions. As previous work validated that these LLM-based agents can reproduce human signaling dynamics in controlled experiments (Cross et al., 2025), we scale these mechanisms to a naturalistic setting to observe the endogenous emergence of status signals. Agents live through a 5-day cycle consisting of three distinct phases: (1) a **Marketplace Phase**, where agents compete in 5 rounds of bidding for food, gadgets, and luxury goods (e.g., Chanel handbags, Labubu dolls); (2) a **Daily Life Phase**, where they experience private work and personal events; and (3) a **Social Phase**, where agents are paired for "first date" interactions. During these dates, agents engage in 80 turns of open-ended dialogue and receive visual observations of their partner's possessions (e.g., "Olivia is wearing a Rolex").

This experimental design allows us to test our conjecture and isolate the causal effect of social visibility by turning on and off the Social Phase. We observe that our agents reproduce emergent human economic effects: they adhere to the Law of Demand for functional goods (Becker, 1976; Varian, 2014), yet the inclusion of the Social Phase drives distinct price run-ups and significantly increased demand for status goods. Most notably, the Labubu doll 'flips' the Law of Demand entirely, exhibiting positive price elasticity where demand *increases* as price increases (a Veblen effect) (Veblen & Howells, 1899). Furthermore, by introducing a Fixed Price condition we demonstrate that high price is not the causal driver of this status dynamic as demand for status goods increases even more with static prices. Crucially, we also reproduce these effects with procedurally generated synthetic goods, ruling out pretraining bias as the sole driver and demonstrating how cultural conventions can emerge purely from interaction.

Altogether we synthesize classical intuitions — Veblen's emulation, Bourdieu's differentiation, costly-signaling —

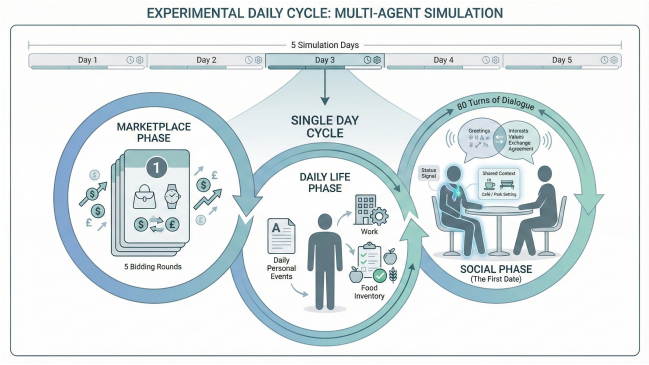

Figure 2: **Simulation Timeline and Daily Phases.** The experiment runs for 5 days. The inset details the daily workflow: agents first compete for resources in 5 rounds of marketplace activity , followed by private daily life events. Finally, agents enter the social phase, where they engage in "first date" interactions consisting of visual observations of status goods and 80 turns of conversation.

with the theory of appropriateness and deliver a generalizable, open-source framework that serves as a computational theory apparatus. This framework also generalizes to non-monetary settings. While space constraints preclude a full discussion of our non-monetary simulations here, our broader methodology demonstrates that these same signaling effects—driven by social visibility and the weight of precedent—emerge in procedurally generated scenarios across domains such as political expression and altruism. Thus, we can now move from observing social conventions and norms to computationally generating them, offering a new way to generate testable predictions about real-world phenomena such as how viral trends emerge, how consumer tastes shift, and how communities develop their own unique status symbols and semiotic codes.

Methods

We employ generative agent-based modeling using Concordia to simulate social dynamics and status signaling behavior. This software includes a modular design such that components can be stitched together to implement various forms of cognition—including memory retrieval, self-reflection, reasoning, and action, with a majority of components powered by a large language model.

Our simulation environment consists of 50 agents instantiated with unique, pre-generated personas detailing their backgrounds and formative memories. The architecture of each agent is operationalized by the "logic of appropriateness" (March & Olsen, 2011). This consists of three prompts whose responses condition the final action for the agent: "What kind of situation is this?", "What kind of person am I?", and "What does a person like me do in a situation like this?". We use Gemma-3-27B as the backbone LLM for all experiments.

Marketplace Environment Agents interact daily within a marketplace featuring goods across four categories: Food, Clothing, Gadgets, and Accessories. Goods (N=25) are stratified into Low, Mid, and High quality tiers (unobservable to the agents), each with a brand label, distinct pricing, descriptive advertising, and inventory levels all indicated in the prompt. Status goods as labeled in the results comprise the Mid and High tiers of clothing and accessories only; the highest tier includes canonical luxury items (e.g., "Chanel Handbag," "Rolex Watch") and collectibles (e.g., "Pop Mart Labubu Monster Vinyl Plush Doll"). The marketplace runs for 5 rounds each simulated day using a clearing-house mechanism to determine prices based on buyer bids and seller offers. If an agent purchases a clothing or accessory item, it is potentially visible to others in the Social Life condition.

To control for brand priors learned by the LLM, we designed a parallel set of synthetic goods and brands (e.g., "Serrurier Juliette Handbag," "Auric Meridian Watch") with equivalent quality tiers, price points, and similar descriptive text, allowing for experiments run with either original or synthetic item lists.

Each of our 50 agents is a buyer initialized with cash drawn from a mixed wealth distribution ranging from poor to rich ($\mu_{poor} \approx 500$, $\mu_{rich} > 100,000$) to ensure heterogeneity in purchasing power, and a single random low-quality clothing item in their inventory.

The sellers in the marketplace simulations are also Concordia agents prompted to sell the items for more than the price of production. When demand is high, the agents adaptively raise the price, and lower the price when demand is low. Each seller sold one of the 25 products, and their inventories were reset between days. These agents do not participate in the other phases of the simulation.

Daily Life Cycle and Experimental Design The simulation runs for 5 consecutive days. Each day consists of three phases: 1) Marketplace, 2) Daily Life Events, and 3) Social Interaction (Figure 2). In Phase 1, agents participate in 5 rounds of buying and selling in the marketplace. In Phase 2, the Game Master generates 3 daily life events that are consistent with each agents background (ie. a simulated work day based on their occupation). Additionally, agents receive an observation from the Game Master that they consumed one unit of food from their inventory if available, and if no food is in their inventory, the Game Master creates an observation that the agent is starving and sick from the lack of food. The latter functionality creates an implicit incentive for the agents to buy food, allowing us to contrast the purchasing of food from other classes of goods like status items. Phase 3 constitutes our key experimental manipulation, where we vary the presence or absence of social interaction. We compare outcomes between conditions (each run for 10 seeds):

Social Life Condition In this condition, after marketplace activities and daily personal events, agents are paired into mixed-sex dyads for a "first date" scenario (other relationship types are possible in our code, see Discussion for future work). At the start of the interaction, each agent receives an

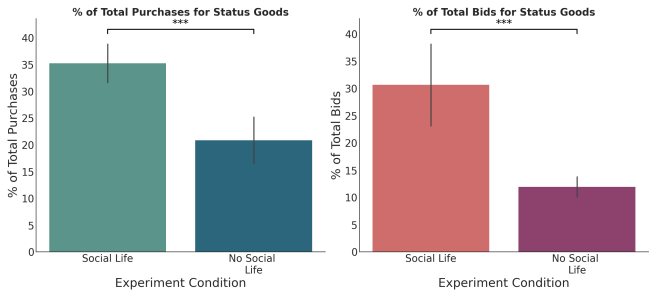

Figure 3: A comparison of consumer patterns on status goods across experimental conditions. Errorbars SEM for 10 seeds.

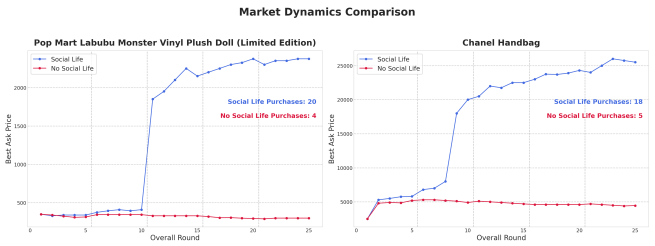

Figure 4: Price run-ups for example episodes. Vertical lines indicate breaks in between days where in Social condition the agents go on dates and have open dialogue.

observation generated by the Game Master that sets up their dialog with a detailed physical description of when they first meet. This observation includes the location of the date and a description of one piece clothing or accessory their partner is wearing, sampled randomly from their partner's clothing and accessory inventory (e.g., "Olivia Perez is wearing a Rolex Watch."). This provides a mechanism for social observation of consumption, serving as the "visual" input to the LLM agent in the form of text. Agents then engage in an open-ended conversation for 80 turns. While agents are not prompted to discuss their possessions, this explicit environmental context often triggers "predictive pattern completion" where agents bring up the item naturally. For instance, an agent observing an "Armani Suit" may say "nice blue blazer" (example of simulation dialogue referenced in Figure 1).

Following the conversation, agents reflect on the date and their partner. All observations, conversations, and reflections are incorporated into the agents' memories, influencing their behavior in subsequent marketplace sessions. First date pairings are generated such that agents talk to a new conversation partner each day.

No Social Life Control Condition This condition only includes the marketplace decisions with no personal events or social life, consisting of 25 rounds of marketplace activity. Their memories are formed based on their private experiences in the marketplace and decisions are solely conditioned on these memories and the formative memories of the persona.

Results

Social Interaction Drives Conspicuous Consumption

To test Conjecture 1—that social exposure increases the weight of precedent for status signaling—we analyzed agent purchasing and bidding behavior across the social and nonsocial conditions. Our analysis focuses on three key patterns: the volume of purchases and bids for status goods, the temporal evolution of market prices, and price-elasticity.

Aggregate Demand and Bidding Behavior Consistent with our hypothesis, the introduction of social visibility significantly altered agent preferences. As shown in Figure 3, agents in the Social Life condition directed a significantly larger portion of their resources toward high-tier status goods. Specifically, approximately 30% of all purchases in the Social condition were for status goods, compared to roughly 19% in the No Social Life condition ($p < 0.01$).

The disparity in desire—measured by the volume of bids placed—was even more pronounced. In the Social condition, bids for status goods accounted for approximately 35% of total bids, whereas in the Non-Social condition, this dropped to approximately 11%. This divergence indicates that while agents in both conditions purchased food and functional items out of necessity, the Social Life agents were willing to engage in aggressive bidding wars for status items, driven by the social utility generated during their daily interactions. In the absence of social observation, demand for luxury goods collapsed to a baseline likely driven solely by intrinsic functional utility or latent LLM priors.

Emergence of Price Run-Ups

The difference in demand manifested dynamically in the marketplace valuation of goods over time. Figure 4 illustrates the evolution of the price for two distinct items: a canonical luxury item (Chanel Handbag) and a trending collectible (Pop Mart Labubu Monster Vinyl Plush Doll) for a representative episode.

In the Social Life condition (Figure 4, top row), we observed distinct "price run-ups" characterized by an aggressive upward shift in the price. Following initial social interactions (rounds 6–10), the trading range for the Chanel Handbag spiked dramatically. Similarly, the Labubu doll—an item with less historical prestige in the model's training data compared to Chanel—saw a massive valuation spike, with the price shifting upward significantly once agents began observing it on others during dates. In stark contrast, the No Social Life condition (Figure 4, bottom row) showed no such emergent value; the price for the Chanel bag gradually declined, while the Labubu doll remained flat at a low baseline.

To demonstrate market sentiment for all the items in this episode, Figure 5 presents a heatmap of the lowest asking price for every item across all four categories (Food, Gadgets, Clothing, Accessories) throughout the 5-day simulation. This metric serves as a proxy for perceived asset value, even in the absence of cleared transactions or bids from buyers. Func-

Figure 5: Heatmaps of prices across time for each item for an example run in the Social Life condition.

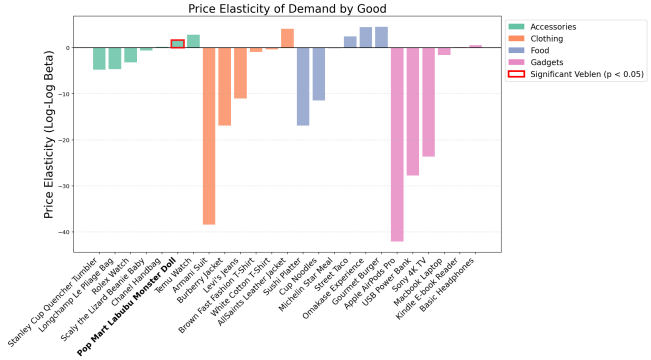

Figure 6: Price Elasticity of Demand for all items. Note the significant positive slope for the Status Good (Labubu).

tional goods (indicated in red and orange) such as the Street Taco or USB power bank remained relatively stable. Because our 'first date' design restricted social observations strictly to clothing and accessories, our weight of precedent conjecture naturally only drove demand for these visible categories. We hypothesize that if functional goods were also observable, they would also experience a baseline increase in demand, though this effect would likely be moderated by an item's capacity for status and identity expression.

Conversely, the status goods (medium and high-priced clothing and accessories) exhibited dramatic increases for items like the Chanel Bag and Labubu doll as previously shown. Additionally, in this episode we see substantial price increases for the Rolex Watch, Longchamp Le Pliage Bag, and Burberry Jacket. Also, the Beanie Baby that was included to be a cheap substitute for the Labubu Doll jumped from $9 to $200 by day 5. Interestingly, the Macbook Laptop also exhibited a significant price run-up, although it is never shown as a signal during social interactions. This pattern only happened in this episode, whereas the price run-ups for the conspicuous items were more consistent across episodes. Altogether however, the price dynamics vary moderately across episodes, and the highest price status good is not always the same, highlighting the arbitrariness and path dependence of our social signaling model.

Price Elasticity and Veblen Effects

To further characterize the behavior of our agents, we evaluated their alignment with both the rational tenets of neoclassical economics that explain human consumer behavior and the "irrational" real-world behaviors that defy them (Veblen & Howells, 1899). We calculated the Price Elasticity of Demand (PED) for each item and across product categories. PED is defined as the percentage change in quantity demanded in response to a one percent change in price. While standard economic theory predicts a negative relationship between price and quantity demanded (The Law of Demand), real-world status signaling often inverts this logic. We estimated this metric in a standard econometric way by fitting a log-log regression model to the time-series data of clearing prices and order books generated by our marketplace simulation (Houthakker, 1965; Varian, 2014).

Our econometric analysis confirms that agents generally adhere to the Law of Demand for functional goods, exhibiting significant price sensitivity for Food (Mean PED = -3.08) and Gadgets (Mean PED = -4.22). While these necessity items show high sensitivity, they remain far less elastic than discretionary categories, such as Low-Quality Clothing & Accessories (Mean PED = -12.27) or Mid/High-Quality variants (Mean PED = -6.64). The relatively lower elasticity of food likely stems from the implicit incentive created by starvation observations and an in-grained LLM prior to buy food in general, mirroring real-world consumption patterns where necessity limits price responsiveness (Andreyeva et al., 2010). Altogether, these baseline behaviors demonstrate that the agents are capable of rational budget constraints and utility maximization, providing a grounded validation that our agents are capable market actors.

However, specific status goods defied this general trend (Figure 6). The most remarkable finding is the behavior of the *Pop Mart Labubu Monster Vinyl Plush Doll*. In the Social Life condition, this item exhibited a **positive price elasticity of demand (+1.45)**, significant $p < 0.05$. Unlike standard goods where price hikes reduce demand (negative slope), the Labubu became *more* desirable as its price increased. However, the direction of causation between demand and price is not identifiable from this experiment, which we investigate in the next section. This is a textbook signature of a **Veblen Good**, yet it emerged entirely from the unprompted social dynamics of LLM agents, mirroring the effects of this real-life international trend in 2025 (Lawrence, 2025; Yang & Li, 2025). This quantitative inversion of the Law of Demand confirms that our simulation can endogenously reproduce complex "irrational" economic phenomena that purely rational actor models fail to capture (Bowles, 1998; Veblen & Howells, 1899).

Demand is Not Driven by Price A central ambiguity in the literature on status goods and Veblen effects is the direction

of causality between price and demand. While the Veblen effect describes an empirical correlation where demand increases alongside price, the causal mechanism remains debated. Costly Signaling Theory (CST) and "naive" interpretations of Veblen effects often posit that the high price itself is the driver of demand (Price → Demand), as the cost serves as the credible signal of wealth. Conversely, an alternative causal pathway suggests that social diffusion and "hype" drive demand, which subsequently drives up prices in a market with scarce goods (Hype → Demand → Price).

Disentangling these mechanisms with field data is difficult, as high prices and high demand typically co-occur. To resolve this identification problem, we introduced a Fixed Price Control condition. In this experiment, the social environment remained identical to the Social Life condition (agents went on dates, observed items, and conversed), but marketplace prices for all items were pinned to their initial baseline and were not permitted to rise.

If the CST interpretation were correct—that agents value these goods because they are expensive or rapidly increasing in price—demand for status goods should collapse in the Fixed Price condition, as the "costly signal" has been removed. However, our theory of appropriateness posits that value is socially constructed through interaction, such that demand should remain high solely due to social visibility and mimetic desire.

Our results strongly support the latter hypothesis. As illustrated in the updated analysis of purchasing behavior in Figure 7, the demand for status goods did not evaporate when prices were fixed; in fact, it increased. In the Fixed Price condition, bids for status goods surged to approximately 45% of total bids, significantly higher than both the No Social Life baseline (12%) and the standard Social Life condition (31%). Similarly, purchases of status goods reached nearly 50% of the total volume in the Fixed Price condition, compared to 35% in the standard Social Life condition and 20% in the No Social Life control.

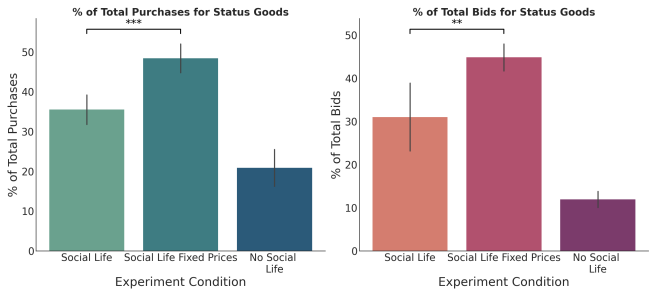

Figure 7: Control experiment where sellers cannot raise prices from baseline.

Validation via Synthetic Goods

A potential confound in using real-world brands (e.g., Rolex, Chanel) is the "prestige bias" inherent in the LLM's pretraining weights. To rule this out, we replicated the experiment using procedurally generated synthetic brands (e.g., "Serrurier Juliette Handbag", "Auric Meridian Watch") that possessed no prior cultural capital.

The results were robust to this substitution. In the Social Life condition, agents rapidly coordinated on these arbitrary tokens as markers of status. Purchases of synthetic status goods comprised nearly 30% of the total volume in the Social condition, compared to less than 18% in the control group. Bidding behavior followed a similar pattern (35% vs. 20%, $p < 0.05$). This confirms that the observed signaling behavior is not merely a retrieval of frozen training data, but an active, emergent process of social construction where agents learn to value arbitrary symbols through peer observation.

Discussion

In this work, we propose a synthesis of signaling literatures through the lens of appropriateness. We posit that status symbols emerge endogenously through a feedback loop of social observation and imitation via predictive pattern completion. This approach allows us to instantiate agents that do not just maximize payoff matrices, but engage in the complexity of real-world semiotics.

This work operates within a specific hierarchy of evidence for generative-agent based modeling, as outlined in previous papers using the Concordia framework (Cross et al., 2025; Vezhnevets et al., 2023). Our results are consistent with prior theories and empirically documented human effects including the Law of Demand (Varian, 2014) and Veblen effects (Veblen & Howells, 1899). While there is some train-test set contamination in training data, the model successfully generated high demand for 'Labubu' dolls—a trend that exploded globally in 2025, after the model's primary training cutoff (Lawrence, 2025; Yang & Li, 2025). At the highest rung in the validity hierarchy is evidence of generalization by forecasting new real-world behaviors, which is the subject of future work.

Our framework's modular approach serves as a general-purpose computational theory apparatus, setting a foundation for future work to investigate how signaling is modulated across other variables. For example, this methodology could potentially identify tipping points where cultural conventions and norms either solidify or collapse (Centola et al., 2018; Granovetter, 1978). There are still limitations that require further development in LLM social simulation, such as lack of diversity and pretraining bias (Anthis et al., 2025). For instance, our models hold categorical priors associating even the synthetic items like 'watches' with status. However, within our framework, this operationalizes habitus—providing the thick cultural baseline necessary to demonstrate how societies socially construct meaning around novel symbols. Despite these constraints, this work establishes a new way to simulate status dynamics from micro generative principle to macro emergent effects.

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