8

The Evolution of Household Bargaining

Recent media attention has focused on a perhaps surprising observation from the perspective of rational choice. Even when women in modern families earn as much as their male partners, they tend to do a larger portion of the housework (Bianchi et al., 2006; Coltrane, 2000; Treas and Drobnic, 2010).[1] The reason this poses a rational-choice conundrum is that when it comes to household bargaining over labor, one would expect that symmetric positions with respect to income and external labor would lead to symmetric outcomes. If both actors work extensively outside the home, this framework would predict that they should divide home labor fairly.

This topic has generated quite a lot of work both in sociology and in household economics. The latter discipline has developed models based in assumptions of rational choice to explain these inequitable household divisions of labor. While these models shed light on the phenomenon, they tend to de-emphasize the role of norms and conventions in patterns of household behavior. As I will argue, there are many reasons to think that norms and conventions influence such patterns, and so models that incorporate their emergence are important here. The idea is not that rational choice-based models are uninformative, but that they fail to capture the relevance of social transmission and cultural evolution to these phenomena. At the end of the chapter I'll discuss how these two approaches can provide complementary accounts of different aspects of household divisions.

[1] I will focus on modern, heterosexual households, not because they are the only ones that matter, but simply because treating all households is beyond the scope of this chapter.

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In this chapter, I do two things. First, drawing on the work from the rest of the book, I present an explicitly evolutionary model of the emergence of coordination in modern households. In particular, I show why certain conditions might favor market labor for one gender and home labor for the other. The goal is to provide a proof of concept for the usefulness of evolutionary models in this domain. I also argue that once these patterns have emerged, they should be relatively stable in the face of changing social conditions. (This is a theme that will become particularly relevant in Chapter 9.) Using these patterns of coordination as a starting point, I then show why emerging patterns of household bargaining, that is, over who does more total work, and has more total leisure time, should favor whichever gender tends to be employed in market work. The idea is that this gender is more powerful in the senses outlined in Chapter 5, and so will tend to end up at preferred outcomes.

This how-possibly story brings together the two halves of this book. The first set of models looks at the first sort of inequity—actors involved in joint action take complementary roles to benefit themselves, and end up with unequal rewards. This feeds into the second part of the story, where this small initial difference contributes to the second sort of inequity, where one type exploits the other. In other words, we see how the two kinds of inequity are interrelated in a special case of gendered division of labor.

8.1 The Evolution of Household Coordination

The model I am about to describe is intended to give a "how-possibly" story for the emergence of norms that favor housework for one gender, favor labor market work for the other, and are sticky in the face of changing external environments. The idea is to show the potential usefulness of evolutionary, rather than choice-based, models in this area, rather than to carefully capture the details of how household division of labor actually emerges.

Start by assuming that two actors in a household must coordinate who does how much market labor and who does how much unpaid household labor. An insufficient level of either of these leads to an unsuccessful household. If household labor is not performed, the household is in poor shape, and the actors are unhappy. If market labor is not performed,

		Player 2		
		Low–High	**Med–Med**	**High–Low**
Player 1	**Low–High**	0, 0	0, 0	1, 1
	Med–Med	0, 0	1, 1	0, 0
	High–Low	1, 1	0, 0	0, 0

Figure 8.1 A three-strategy complementary coordination game

the household does not generate income to meet basic needs. Figure 8.1 shows a payoff table of a game where actors do best when they perform complementary levels of household and market labor. Each actor chooses Low–High (low household labor, high market labor), Med–Med (moderate levels of both), or High–Low (high household labor, low market labor). Complementary splits receive the best payoffs. I assume there is a viable even split so that actors can mutually do well by evenly dividing market work and household labor (though this may not always be a good assumption).[2]

This game assumes that the actors are completely symmetric in that each arrangement will generate the same amount of goods. In modern societies, however, it is usually the case that the average earning power of men exceeds that of women, and in recent history this disparity has been even greater. For this reason, let's add to the model a factor α that determines how much one actor versus the other earns. When the higher-earning actor chooses High–Low, this increases the total payoff at that equilibrium, compared to their Medium amount of work, by α percent. When the higher-earning actor chooses Low–High, this decreases the payoff at that equilibrium by α percent. To give an example, assume that $\alpha = .5$. The resulting payoff table (modified from the one in Figure 8.1) is shown in Figure 8.2. Of course (not to bury the lede) this aspect of the model assumes payoff asymmetries for roles to get an asymmetry in the evolution of these roles. But the idea is that an asymmetry in workplace wages leads to an asymmetry in household division of labor.

[2] One might complain that the payoffs for miscoordination here are unrealistic. Actors who are both engaged in market labor can use the money earned to pay for household labor. In such a case Low–High vs. Low–High might be better than High–Low vs. High–Low. Likewise, one might point out that equal sharing might lead to production of a greater total resource since partners are more satisfied. The goal with this model is to give a sort of easy to understand proof of possibility, so I ask the reader to tolerate a few inaccurate assumptions.

		Player 2		
		Low–High	Med–Med	High–Low
Player 1	Low–High	0, 0	0, 0	1.5, 1.5
	Med–Med	0, 0	1, 1	0, 0
	High–Low	.5, .5	0, 0	0, 0

Figure 8.2 A three-strategy complementary coordination game with better equilibria for both players

		Player 2		
		Low–High	Med–Med	High–Low
Player 1	Low–High	0, 0	0, 0	.75, 2.25
	Med–Med	0, 0	1, 1	0, 0
	High–Low	.75, .25	0, 0	0, 0

Figure 8.3 A three-strategy complementary coordination game where players have some conflict of interest

This is similar to the influential analysis by Okin (1989) of how wage asymmetries can lead to cycles of inequity based on the rational choices of men and women who divide household labor.

This game, like the last one, assumes full common interest between the actors in the household. But, as I will elaborate shortly, this is not a particularly good assumption. Studies have shown that control over goods or money provides direct, personal benefits to members of a household that do not accrue to those who do not control these resources (Beblo, 2001; Eswaran, 2014). For this reason, let's add the assumption that the player who controls the money also derives some benefit from doing so. Let β be a factor that determines the total proportion of household resources that the actor doing more market labor receives. If $\beta = .5$, each actor receives half the total generated household resources. If $\beta > .5$, the player with greater outside earnings gets a greater percentage of the earnings. Figure 8.3 shows the game above with $\beta = .75$, so that the actor doing household labor receives only 25% of generated payoff at each outcome.

The payoffs in this game combine two factors—benefits from efficient coordination of labor at home, and benefits from monetary gains associated with certain coordination arrangements. The payoffs, of course, cannot be taken as tracking monetary compensation directly. Rather the idea is that under the feasible household divisions of labor from a work perspective, some of these will be more or less preferable to the actors as a result of the money that they gain and their control of it.

In this final version of the game, things look different from the first version I presented. In the first version of this problem, every equilibrium generates the same amount of total good. Once we add the assumption that one actor earns more than the other, we see a spectrum of total good generated. This change moves the game further from the conventional end of the spectrum, and more toward the functional end of things on the measure outlined in Part I. Once we add the assumption that players prefer to control money, the equilibria can be ordered for efficiency in the sense that one yields the greatest total payoff, but now players can have conflict of interest in the sense that they nonetheless prefer different equilibria. In this particular example, player 1 prefers the Med–Med vs. Med–Med equilibrium, while player 2 prefers the Low–High vs. High–Low equilibrium. Notice that in this game the equilibrium that generates the most total good will also be the most inequitable one. This is because the total amount of available payoff at that outcome is highest, so an unequal division of this larger amount will more strongly favor the working partner in terms of total payoff.

What happens when populations of potential partners evolve to divide labor in the household in a situation well-modeled by this game? In the first version presented, where coordination is the only thing actors care about, the populations evolve to any of the three equilibria with equal probability. As α—the factor determining how much one actor makes compared to the other—increases, evolution will tend to drive populations to the Low–High vs. High–Low equilibrium where that actor works outside the home. Thus, intuitively, we expect that if one type of member of the household can earn significantly more than the other, conventions will emerge where that type works outside the house. In situations like this there is a functional explanation for the emergence of such a convention—it benefits both actors in that it brings more resources home. Figure 8.4 shows how the basins of attraction for the three equilibria change as α, the relative earnings of one spouse, shifts. β in this figure is held fixed at .6, or a moderate inequity in who controls household resources.

As β—the factor determining which actor gets more benefits from earned income—shifts, it makes the equal work split more attractive. Inequitable outcomes have smaller basins of attraction because they yield relatively low payoffs for one type of actor, who will then be disincentivized from learning the relevant behavior. This can mean that, in

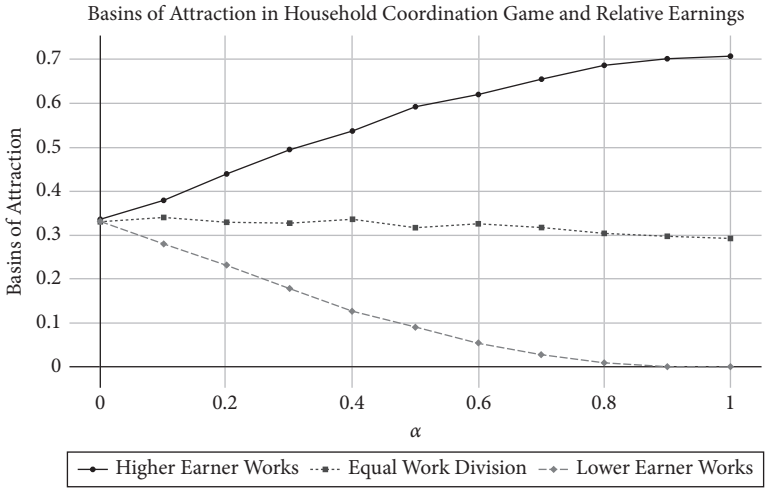

Figure 8.4 Basins of attraction for the three equilibria in the household coordination game as a function of α, $\beta = .6$

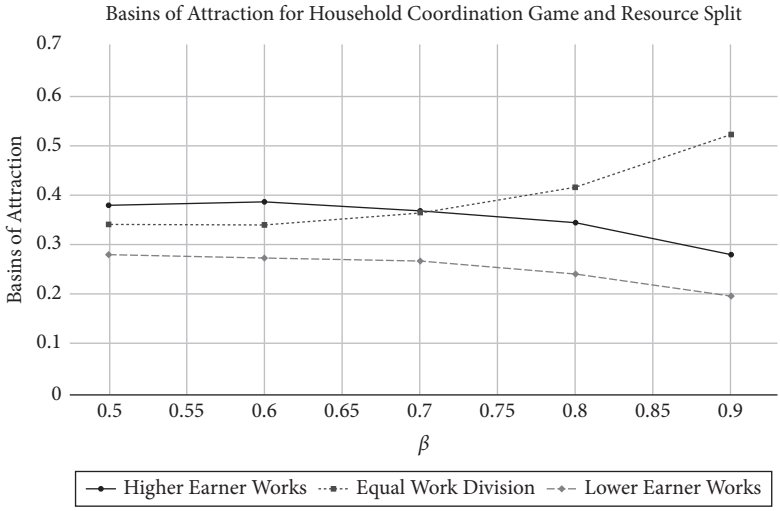

Figure 8.5 Basins of attraction for the three equilibria in the household coordination game as a function of β, $\alpha = .1$

this model, the equilibrium with the largest basin of attraction may not be the one that generates the most total payoff. Figure 8.5 shows an example. Here $\alpha = .1$, so one type can earn only slightly more outside the household. When the split between actors is only somewhat inequitable, the highest payoff outcome is the most likely to emerge, when the split is very unfair, though, the most likely outcome is Med–Med vs. Med–Med. In cases where α is higher, though—where one actor can earn much more—the Low–High vs. High–Low equilibrium will remain the most likely one to emerge for a wider range of β.

This example shows how external conditions, such as those related to the working world, can influence the development of conventions surrounding household division of labor. When one partner can earn more, outcomes where they work will be more attractive, even though they are the least equitable available equilibria.

8.1.1 Changing the environment

Suppose that a convention of household coordination is reached in an environment where members of one gender can generate greater payoffs outside the home. It might seem that the way to change this convention is to simply legislate equal pay for equal work across genders. This takes away the initial pressures that made it more likely for one gender to end up at a convention where they work outside the home.

Once the population has reached a convention, however, changes to α and β will not actually shift it away from the current convention. Under such changes, the convention still remains an equilibrium, meaning that no one is incentivized to switch. (Note that this is true even if we reverse α so that it becomes jointly much more efficient for the gender spending time at home to work.) What this tells us is that rules for equal pay, even when they work, may not be enough to change gendered patterns of household coordination when conventions and norms are at play. Conventions have staying power.

Changing levels of pay for the two genders does matter in a (perhaps more realistic) model where there is some stochasticity to the behavior of actors. Under such a model, it is possible for random changes in the population (or directed changes, as will be discussed in Chapter 9), to shift an equilibrium once it has been reached. In such a situation the size of the basin of attraction surrounding an equilibrium for household coordination will determine how easy it is to unseat. In the case where

pay is more equal, this will decrease the size of the basin of attraction around the Low–High vs. High–Low equilibrium, meaning that other kinds of shifts in the population can move it away. In the next chapter, I will address this sort of convention change at length.

8.2 Household Bargaining

Now let us move on to the puzzle introduced at the beginning of this chapter—why do women who work outside the home continue to perform a greater amount of household labor than men with similar earnings and working hours? More generally we can also ask—why do women tend to do more labor overall, and to have less leisure time, than men?

First, let me add some detail to the phenomenon. Findings from sociology and economics are that 1) as women's share of household earnings increases, they perform a smaller portion of household labor and 2) nonetheless, regardless of circumstances in the household, women average significantly more household labor than men (Brines, 1994; Bittman et al., 2003; Gupta, 1999; Greenstein, 2000).[3] In addition, the United Nation's *Human Development Report* in 1995 found that in thirty-one countries women consistently enjoyed less leisure time and worked longer hours when household labor and labor force work were combined.

Sociologists have considered various explanations for this data. The perspective of "exchange theory" suggests that when women earn more relative to their husbands, this translates into a more powerful bargaining position which they can use to lessen their portion of household labor. Sanjiv Gupta's "autonomy" model holds that women's house-

[3] This difference in division of labor seems to lead to advantages for married men. Married men have been found to earn more than single men, and this seems to be a direct effect of having a spouse who provides domestic support (Ginther and Zavodny, 2001; Bardasi and Taylor, 2008; Eswaran, 2014). There is also some data indicating that for households where women earn more than men, this trend switches in that women start doing *more* household labor on average than women whose salaries approach, but do not exceed, their husband's (Bittman et al., 2003; Berk, 2012). Authors have explained this by claiming that in these cases women and men 'do gender', in the sense famously outlined by West and Zimmerman (1987). In other words, this trend is an attempt by these households to maintain the appearance of gender conformance in the face of the woman's superior salary. This finding has been convincingly challenged by Gupta (2006, 2007); Gupta and Ash (2008) and by Sullivan (2011), though, who explain it as a statistical mistake, so I do not elaborate these findings here.

hold labor decreases as a function of their absolute earnings, with little dependence on their relative income, or their husband's absolute income (Gupta, 2006, 2007). In other words, household labor is the domain of women, and wealthier women get out of it by paying others to do the work. Both frameworks explain the variation in bargaining across households, but not the general social trend where women work more. Sociologists acknowledge that the large gap between men and women generally in doing household labor is a result of gender norms. These theories do not, though, say much about how these norms emerge in the first place.

Economists have also generated a substantive body of work intended to explain this phenomenon. The household is a paradigmatic case of Schelling's "mixed motive" game. Interests among members of the household are strongly aligned. Beblo (2001), for instance, in her work on bargaining over time allocation in the household, points out that forming a household saves members from transaction costs that arise in the usual processes of trading goods, advantages members in terms of information-sharing, improves efficiency in the consumption of public goods, and provides an insurance policy should one member of the household become sick or unemployed. For these sorts of reasons, traditional economic approaches to the household treated it as a single unit of interest (Gronau, 1973, 1976; Becker, 1981). But a wide swath of studies has since provided strong evidence that, in fact, different members of the household often have separate interests (Thomas, 1990, 1993, 1994; Hoddinott and Haddad, 1995; Udry, 1996; Doss, 1996). Lundberg et al. (1997), for example, in a landmark study observe that in a natural experiment where the British government changed a tax break in men's paychecks to a direct payment to women, there were observable changes in spending—for example, purchases of women's and children's clothing increased whereas purchases of men's clothing and tobacco decreased.[4] (Okin (1989) makes a similar critique in philosophy, in response to theories of justice that treat the family as a univocal unit.)

Recognizing both the common and conflicting interests present in a household, economists have used bargaining games to model division of material resources and time in this domain. Some of this work has

[4] See Beblo (2001) and Eswaran (2014) for an excellent overviews of this, and other literature, indicating that treating households as units is problematically simple.

applied Nash's axiomatic approach to household bargaining. Here the disagreement point can be interpreted as the payoff to individuals should they divorce (Manser and Brown, 1980; McElroy and Horney, 1981).[5] Systematic differences in these payoffs can result from "extrahousehold environmental parameters" (McElroy, 1990)—factors like differences in social network support, legal structures, access to communal goods, social norms, education, work experience, ownership of assets, chances on the marriage market, and laws such as divorce and inheritance laws (Eswaran, 2014). Lundberg (2008) points out that extremely different expected disagreement points from divorce can result from traditional division of labor with women doing home and men market labor. This is because the latter leads to private goods (money) and is more relevant to single life.[6] (Philosophers have attended to this sort of asymmetry in thinking about justice and morality. Goodin (1986) identifies symmetric ability to leave a relationship as a key factor in preventing exploitation, and Okin (1989) makes explicit how this requirement often fails in marriages.)

These models can explain systematic patterns in household bargaining in the following way. Earned income and the other social factors described above will determine the disagreement point for each couple. If women's wages are lower, on average, than men's wages, their disagreement point will tend to be lower and, as a result, they will be expected to receive less preferable outcomes in household bargaining scenarios. This can occur even in couples where partners work the same hours because these other social factors matter to the disagreement point.[7]

[5] The disagreement point can also be interpreted as payoffs from remaining in a noncooperative marriage where actors revert to traditional marriage roles (Lundberg and Pollak, 1993), or where actors treat each other poorly (Bergstrom, 1996). As Bergstrom (1996) argues, "If one spouse proposes a resolution to a household dispute and the other does not agree, the expected outcome is not a divorce. A more likely outcome is harsh words and burnt toast until the next offer is made" (1926).

[6] Other work using bargaining games to model the division of labor and goods in the household employs models with deeper levels of conflict between actors, where, for example, one actor is dominant and may make unilateral choices on how to allocate their time, while the other must react to this sort of decision (Beblo, 2001). Still others have used dynamical models to understand household bargaining where actors' possible outcomes at each stage are determined by previous choices (Konrad and Lommerud, 2000; Ott, 2012). A decision to invest capital in education, for example, might translate into a better outside option later on.

[7] Stevenson and Wolfers (2006) provide empirical evidence for this theoretical prediction. When the United States changed to unilateral divorce laws, thus raising the divorce

What these models do not explain are cross-national differences in household division of labor even when factors such as women's wages are held constant (Treas and Drobnic, 2010). These features are arguably accounted for by norms that govern household division of labor. Fuwa (2004), for example, finds that gender norms impact household bargaining beyond what any individual monetary/power differences might explain. In countries with norms for high gender equality, women are better able to make use of their bargaining chips. Evolutionary models where behavior emerges at the group or society level provide simple, compelling explanations of the norm-like aspects of household bargaining inequities.

8.2.1 Evolving household bargaining

How do we go about providing a conventional or normative explanation for inequity in the household division of labor? We can apply the evolutionary bargaining models discussed previously in the book directly to the case of household bargaining over time spent working.

If we assume that household partners value time away from housework, and that types have different disagreement points, the prediction is that conventions of division are more likely to emerge that favor the type with the higher disagreement point. If one interprets this disagreement point as divorce (as we have discussed), it is clear that in Western (and many other) societies men have had a higher one. This is a direct result of men typically working outside the home, and so having the capacity to singly support a household in the case of divorce, and earning higher wages on average. Other factors contribute to this sort of difference, as outlined in the previous section—differences in the social networks, assets, and access to communal goods, etc. Men have also tended to have greater potential to issue and carry out threats when household bargaining breaks down both because of physical differences, and differences in economic status. If men are better able to threaten their spouses in the case of divorce—say by hiring an expensive lawyer—this can lead to different disagreement points between genders in the case of divorce.

If one type has better outside options than the other when it comes to household formation, that type, likewise, may have an advantage in that

threatpoint for women, their outcomes in marriage, including suicide rates, domestic violence, and homicide, improved.

conventions of division that do not favor them will not be equilibria. In societies where women are incapable of earning their own living, their only option is typically to form a household or else suffer greatly. People in this sort of situation will be willing to form a household even if they expect to receive the short end of the stick when it comes to labor. On the other hand, someone who can capably support themselves may not be willing to enter a household, or remain in one, if they do not receive the benefit of preferable bargaining outcomes. As we discussed in Chapter 5, this means that social conventions that emerge will favor the group with higher outside options.

The insight from section 8.1.1, that even when social conditions change, conventions surrounding household division of labor are not necessarily going to shift in response, is relevant here. Presumably, the disagreement points and outside options of men and women have become more equal but on the evolutionary picture we should still expect household division of labor to continue to favor men as a result of established population level equilibria.

Overall, these models predict that in industrial and post industrial societies, emerging household bargaining norms should favor men, who tend to have higher wages and greater economic security, meaning higher disagreement points *and* better outside options. This direct application of the models helps explain the emergence of social conventions, and attendant norms, that favor men when it comes to overall time spent working.

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As hinted at in the introduction to this chapter, rational-choice models and evolutionary models of household bargaining provide not alternative explanations, but complementary accounts that clarify different features of the same phenomenon. When it comes to household bargaining and division of labor, we see both between-household variation, and across-society regularity.[8] Evolutionary processes of social imitation and repeated interaction may lead to general divisional norms between men and women in the household. Differences in wages, social networks, utility functions, etc. between any two partners may influence how, given these divisional norms, each actual pair determines their levels of labor.

[8] Young (2015) calls this sort of social regularity of norm-governed behavior *compression*.

On this picture, social norms provide the regularity, and rational choice the variation, between households.[9]

Sen (1987) provides an extended analysis suggesting something similar. As he points out, "perceptions" of desert and legitimacy may mean that women and men do not perceive household divisions as unequal, even when they are, from a more objective standpoint. He points out that "[o]ur agency role is often overshadowed by social rules and by conventional perceptions of legitimacy. In the case of gender divisions, these conventions often act as barriers to seeking a more equitable deal, and sometimes militate even against recognizing the spectacular lack of equity in the ruling arrangements" (45). The idea here is that social conventions influence what actors believe they deserve in the household, or what would be fair, thus shifting bargaining outcomes for individual households. The account here complements this work by explaining how these social conventions might arise.

Altogether, this chapter should be taken as showing how, in principle, the evolutionary framework developed throughout the entire book—for the emergence of both the first, and the second, sorts of inequity—can be applied to illuminate a real-world case. These two aspects of inequity can intertwine to create persistent disadvantage to those in one social category, even in the face of changes intended to improve things.

[9] Lundberg and Pollak (1993) suggest a different way of combining approaches. Their model of household bargaining includes a threatpoint that returns behaviors to socially sanctioned gender roles (and Lundberg (2008) re-emphasizes the importance of norms and conventions to our understanding of household divisions).