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The intergenerational sources of the U-turn in gender segregation

Ling Zhu[a] and David B. Grusky[b,1]

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In the early 1970s, the balkanization of the US labor market into "men's occupations" and "women's occupations" began to unravel, as women entered the professions and other male-typed sectors in record numbers. This decline in gender segregation continued on for several decades but then suddenly stalled at the turn of the century and shows no signs of resuming. Although the stall is itself undisputed, its sources remain unclear. Using nearly a half-century of data from the General Social Survey, we show that a resurgence in segregation-inducing forms of intergenerational transmission stands behind the recent stall. Far from serving as impartial conduits, fathers are now disproportionately conveying male-typed occupations to their sons, whereas mothers are effectively gender-neutral in their transmission outcomes. This segregative turn among fathers accounts for 47% of the stall in the gender segregation trend (between 2000 and 2018), while the earlier integrative turn among fathers accounts for 34% of the initial downturn in segregation (between 1972 and 1999). It follows that a U-turn in intergenerational processes lies behind the U-turn in gender segregation.

gender segregation | intergenerational mobility | family processes

Significance

The US workplace is hypersegregated into two worlds, a "men's world" comprising occupations with very few women, and a "women's world" comprising occupations with very few men. Although many commentators have argued that this gender divide would gradually wither away, in fact the workplace suddenly stopped integrating 20 y ago. By building a model that combines mobility and segregation processes, we show that the stall was partly driven by a change in how fathers transmit occupations. When daughters streamed into the economy, fathers began to pass on male-typed occupations disproportionately to their sons, whereas mothers remained steadfastly gender-neutral. This son-biased shift, which cut off the integrative trend, suggests a role for family-centered interventions that target where the gender revolution faltered.

In all late-industrial countries, women and men continue to occupy very different types of jobs, with women concentrated in service and nurturing occupations (e.g., sales clerk and nurse) and men concentrated in manual and analytic occupations (e.g., laborer and computer scientists). The standard sociological account of such segregation treats it as a premodern relic that should gradually disappear as educational opportunities are equalized, egalitarian gender attitudes diffuse, overt and covert forms of employer discrimination are rooted out, and family-friendly workplaces and related labor market reforms are instituted (1, 2). Between 1970 and 1990, these types of institutional reforms indeed seemed to be bearing fruit, with most late-industrial countries experiencing sharp declines in segregation (3).

This egalitarian turn proved to be short-lived. By the end of the 20th century, the decline in gender segregation had stalled in many late-industrial countries, including the United States (4–7). In Fig. 1, we present the US trend using the General Social Survey (GSS), the main data source for our analyses (8). The trend lines in Fig. 1 reveal that the downturn stalled well before integration was achieved (and Fig. 1*B* additionally suggests a resegregative uptick off this already high baseline). To completely eliminate segregation, ∼60% of US workers would have to shift to a different occupation, a stark result given the stated commitment to gender equality and equal opportunity in the United States. This hypersegregation translates into profound gender gaps in pay, authority, working conditions, and much more (9–12). Because occupational segregation generates such a wide range of unequal outcomes, it has become a conventional policy target among those who seek to reduce gender inequality.

The long line of research on the sources of the stall proceeds in part from this widely shared (albeit not universal) commitment to reduce gender inequality. Although far from conclusive or exhaustive, the available research suggests that 1) the persisting double burden of domestic work erodes the willingness or capacity of women to hold jobs that entail long hours or overwork (12–14); 2) the persistence of norms against women outearning their partners (in marriages between women and men) leads to settling and underachievement (15); 3) the persistence of essentialist beliefs about the types of occupations that women and men are qualified to undertake locks in a conventional division of labor (1, 16, 17); and 4) the continuing tendency of employers to discriminate against mothers (18) and those who participate intermittently in the labor force (19, 20) makes it difficult for women to break into male-typed occupations.* Across these assorted

*The terms "male-typed" and "female-typed" have conventionally been used to refer to the stereotypic gender composition of an occupation. We continue to use these terms here but with the understanding that they refer to attributions about the gender composition of an occupation rather than the sex composition of an occupation (21).

Author affiliations: [a]Department of Sociology, The Chinese University of Hong Kong, Shatin, Hong Kong, 999077, China; and [b]Center on Poverty and Inequality, Stanford University, Stanford, CA 94305

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[1]To whom correspondence may be addressed. Email: grusky@stanford.edu.

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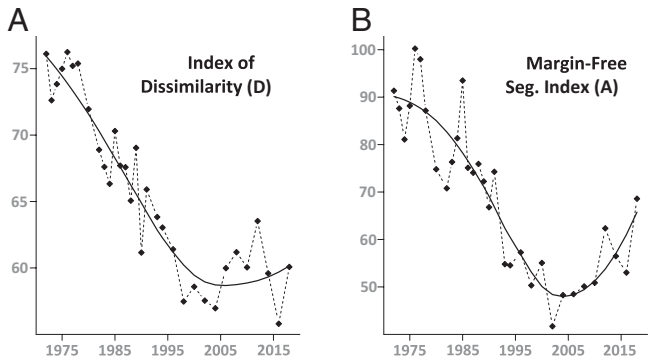

Fig. 1. The U-turn in occupational gender segregation shown by (*A*) the index of dissimilarity and (*B*) a margin-free measure of the gender-by-occupation association. Analysis is based on the 1972 to 2018 GSS using women and men in the labor force, ages 25 to 64 (inclusive), with nonmissing data on age, gender, and occupation. $n = 44{,}640$. Occupations are coded with 1970 Census Occupational Classification (see *SI Appendix*, Appendixes B and D, for details). Trend is smoothed with locally smoothed regression (LOESS) with the span set at 0.75. For the definition of D and A, see Materials and Methods.

supply-side and demand-side accounts, a common theme is that the easy desegregative gains have been creamed off, that a new equilibrium or natural rate (22) has been reached, and that puncturing this equilibrium may require different or more aggressive countermeasures.

This interpretation rests on a distinction between 1) overt and easy-to-attack inequalities and 2) covert and difficult-to-attack inequalities. It is often argued, for example, that overt forms of hiring discrimination against women can be reduced through antidiscrimination law and open hiring practices, whereas subtler or covert forms are not as easy to address, at least with legal remedies. Likewise, the extreme essentialist view that women are utterly lacking in rational faculties was an early casualty of the gender revolution, whereas it has proven more difficult to root out a subtler form of essentialism that presumes that men are more likely than women to be "brilliant" or "geniuses" (23). By this logic, the gender revolution will only be reenergized by developing new interventions that are fine-tuned for the subtler, albeit still very consequential, mechanisms that lie behind gender inequality.

This conclusion may well be warranted. It would, however, be premature to adopt this interpretation without a fuller understanding of the institutional sources of the stalling out. It is striking in this regard that none of the foregoing accounts directly features the role of intergenerational processes. To be sure, conventional accounts routinely invoke the segregative effects of gender-biased training, norms, and culture, but the social processes through which gender-biased training is delivered or gender-biased norms and culture are instilled are left unclear and thus may or may not have intergenerational sources. This is an unfortunate omission because it undermines our capacity to remediate well. As it stands, most currently popular interventions do not target intergenerational processes (24), an understandable state of affairs given that relatively little is now known about their role in the stalling out.

There is, then, a worrying omission in our research on the gender U-turn. Although this omission might seem surprising, it has to be remembered that the contemporary family is often seen as a prime carrier of new forms of gender egalitarianism and accordingly an unlikely source of the stalling out. The new gender-egalitarian family features mothers who are increasingly likely to work, to commit to bona fide careers, and to espouse liberal attitudes (25). In this conventional characterization of familial change, it is notable that mothers are represented as a main force for change, whereas fathers remain in the background largely carrying on. This raises the possibility that fathers may not always be unfettered agents of egalitarian change and may, to the contrary, be implicated in the stalling out. The purpose of our paper is to explore this segregative-father hypothesis by melding models of segregation and intergenerational transmission.

The results will show that the U-turn in the segregation trend is indeed linked to a U-turn in intergenerational processes. As we will discuss, a variety of mechanisms may lie behind the rise of segregative reproduction, yet most of them involve familial processes in some fashion. It follows that insofar as desegregation is a policy objective, it may be strategic to build interventions that address contemporary family processes.

The two streams of mobility research upon which our analysis will capitalize are those examining 1) the net effects of mothers and fathers on outcomes and 2) the effects of intragenerational mobility on segregation. The first of these two streams is of course especially relevant when examining the intergenerational sources of segregation (26, 27). In recent decades, there has been a backlash against treating the father's or "family head's" occupation as a satisfactory measure of class origins (28), a long-overdue development given that a rising share of children are now growing up in more complicated families with many potential role models (29, 30). This newer line of multiple-parent mobility research has, however, focused mainly on examining the relative size of the effects of mothers and fathers, a type of "horse race" analysis that comes naturally when one seeks to rectify decades of scholarship that ignored mothers altogether. As important and influential as this research is, it cannot directly answer the research question that we are taking on, given that the implications of this horse race for occupational segregation depend on the extent to which class and gender-typing reproduction come together. To understand how intergenerational transmission contributes to gender segregation, we need to know 1) whether mothers are passing on female-typed occupations disproportionately to daughters and 2) whether fathers are passing on male-typed occupations disproportionately to sons. Although the intergenerational transmission of gender-typed aspirations is well understood (31, 32), our research takes the next step of building gendered mobility models that uncover whether actual reproductive practices are affected by the gender of the parent, the gender typing of the occupation, and the gender of the offspring (33).

The second stream of mobility research relevant to our analysis examines the effects of intragenerational mobility on gender segregation (34). This line of research, which has a long history (35), examines how women and men move in and out of the labor force over their career, how women and men move in and out of gender-typed occupations over their career, and how such mobility has gendered sources (e.g., sexual harassment, gender discrimination, and the "second shift"). Within this literature, many scholars (36) have examined whether the gender of managers affects hiring and promotion decisions (and hence downstream segregation), a line of questioning that is formally similar to our own interest in whether the gender of the parent affects occupational outcomes. Because parents are engaged in ongoing socialization, aspiration development, human capital investment, and network provisioning, their effects on segregation may well be more consequential than the pinpoint hiring and firing decisions of managers. This is the core rationale for building intergenerational processes into a segregation trend analysis.

Results

We proceed via five analytic steps that yield evidence on 1) the effects of incorporating task gendering into the definition of big social classes, 2) the segregative effects of mother–child

and father–child reproduction during the post-1990s stall, 3) the segregative effects of father–child reproduction during the longer U-turn period (1970s to present) in which occupational information on mothers is not consistently available, 4) the types of intergenerational reproduction that are driving the U-turn, and 5) the extent to which intergenerational processes stand behind the U-turn. For each of these five steps, we rely on GSS data because they remain a premier source for monitoring intergenerational trends in occupational mobility. The key descriptive statistics for our analytic sample are described in Materials and Methods and presented in *SI Appendix*, Table S1.

Incorporating Gender into Class Schemes. In most social mobility research, occupations are aggregated into "big classes" (e.g., professionals, routine nonmanuals, craft workers, laborers, and farm workers), an unattractive approach for our purposes because the resulting categories merge female-typed and male-typed occupations and cannot, therefore, capture trends in segregation very successfully. Although some mobility research has been based on more detailed occupational categories (37), the GSS and other available surveys are too small to study trends at a detailed occupational level. To answer our research question, we thus need to build a class scheme that can successfully represent trends in occupational segregation, yet does so without introducing so many new categories as to overtax the relatively small samples of the GSS. The big classes conventionally used by mobility scholars are not just unsuitable for our analytic needs but are more generally problematic by virtue of ignoring the fundamental effect of gender composition on the culture and life chances associated with a social class. It is accordingly hard to justify the mobility-modeling convention of constructing gender-neutral class categories.

Although a gendered class scheme could be built by classifying occupations by the gender-typing of the various tasks that they comprise (e.g., nurturing, analysis, and risk-taking), this approach would require identifying the gender-typing of all job tasks and deciding, a priori, on an appropriate task-gendering cut point that takes an occupation's complicated mixture of tasks into account. As described in Appendix B of *SI Appendix*, we have circumvented this requirement by instead carrying out a black-box search for a gender-composition threshold that best reproduces the trend in segregation. This approach entails identifying a threshold that, when used to split each big class into two subclasses (i.e., female-typed and male-typed), yields a segregation trend that is as close as possible to the trend based on disaggregated occupational data. The optimizing threshold under this approach (i.e., 13% women in 1970) allows us to build "gender-infused" big classes that capture the main vulnerabilities and invulnerabilities to change at the detailed occupational level. This threshold can accordingly be used to disaggregate each of eight conventional big classes into 1) a female-typed subclass comprising all occupations above the threshold and 2) a male-typed subclass comprising all occupations below the threshold. The occupational composition of the resulting subclasses is presented in *SI Appendix*, Table S3.

This black box approach yields a 16-category scheme that has strong face validity. As indicated in Table 1, the occupations aggregated into female-typed subclasses rely on feminized tasks (e.g., registered nurse, school administrator, receptionist, and childcare worker), while those aggregated into male-typed subclasses rely on masculinized ones (e.g., airline pilot, construction inspector, mail carrier, and truck driver). In Fig. 2*A*, we additionally show that our 16-category classification successfully reproduces the trend in segregation (see disaggregated curve), a result that is not predetermined by our algorithm. Although our black-box search chooses a threshold that best reproduces the shape of the trend line, there is no guarantee that the best solution is also a satisfactory one. On this point, it is reassuring that the segregation trend with our 16-category classification has the same shape as the trend based on disaggregated occupations, save that the very slight post-2000 uptick is not reproduced. Fig. 2*B* shows that our class scheme also recovers the well-known finding (4) that desegregation has principally been achieved via net flows of women into male-typed occupations rather than net flows of men into female-typed occupations. We see that 1) the gender composition of female-typed occupations is largely unchanging over the last half-century (i.e., the black time series) while 2) the representation of women within male-typed occupations rises sharply over the last 3 decades of the 20th century and then stalls thereafter (i.e., the gray time series). The latter trend nicely mimics the segregation trend.

Table 1. Illustrative occupations in 16 subclass categories

Big class	Female-typed occupations	Male-typed occupations
Nonmanual sector		
Professional class	Reg. nurse	Physician
	Kind. teacher	Airline pilot
Managerial class	School admin.	Finance mgr.
	Health admin.	Constr. insp.
Sales class	Retail clerk	Auctioneer
	Prod. demonstr.	Bond sales
Clerical class	Typist	Mail carrier
	Receptionist	Stock clerk
Manual sector		
Craft class	Book binder	Plumber
	Window dresser	Carpenter
Laboring class	Sewer	Truck driver
	Stitcher	Constr. lab.
Service class	Maid	Guard
	Childcare	Watchman
Farm class	Unpaid helper (on farm)	Farm foreman
		Farmer

Entries are abbreviated 1970 Census titles. Gendered titles (e.g., foreman) are taken directly from the 1970 Census scheme and are not corrected.

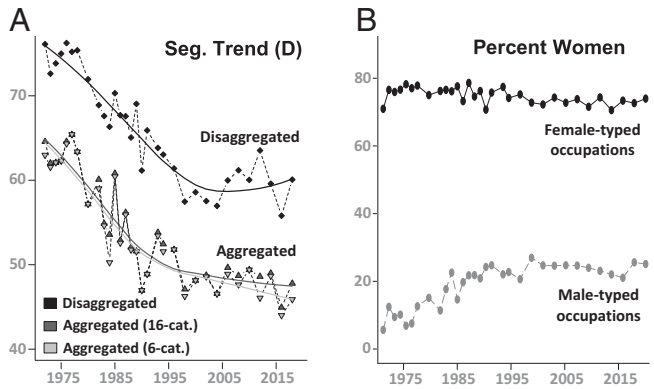

Fig. 2. The new class scheme reproduces (*A*) the disaggregate trend in gender segregation and (*B*) the well-established result that desegregation is achieved via net flows of women into male-typed occupations. For convenience, we have reproduced the disaggregated time series from Fig. 1*A*, as our objective is to approximate its trajectory with our aggregated class schemes. Analysis is based on the 1972 to 2018 GSS using women and men in the labor force, ages 25 to 64 (inclusive), with nonmissing data on age, gender, and occupation. $n = 44{,}640$. Occupations are coded with 1970 Census Occupational Classification (see *SI Appendix*, Appendixes B and D, for details). Trend in *A* is smoothed with LOESS (with the span set at 0.75).

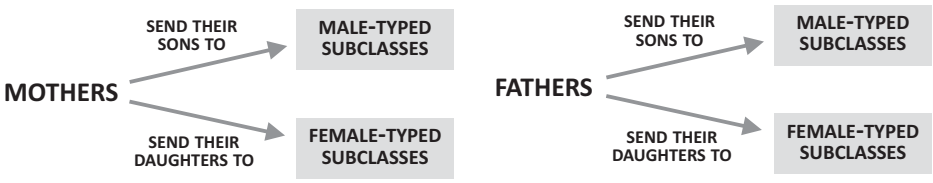

Fig. 3. A stylized representation of segregative reproduction. Because gender-segregative transmission occurs within the context of class-based transmission, both types of transmission must be simultaneously modeled.

These two tests in Fig. 2 indicate that our gendered class scheme provides a satisfactory foundation for examining intergenerational processes underlying segregation. We will thus use our 16-category scheme whenever there are enough data to do so. Because of sample size constraints, our more complicated analyses will, however, have to rely on an aggregated version of this scheme that subdivides three big classes (i.e., professionals, other nonmanual workers, and manual workers) into two subclasses each (*SI Appendix*, Table S3). The resulting 6-category scheme, like the 16-category scheme, closely reproduces the segregation trend for disaggregated occupations (Fig. 2*A*).

The Segregative Effects of Mothers and Fathers. This gendered class scheme is useful because it allows analysts to examine how the "gender" of the class interacts with the gender of the parent and child. Although such interactions are likely strong and may need to be accommodated in all mobility models, we focus here on building a model that is specialized for the purpose of understanding how intergenerational processes can affect segregation. We discuss alternative parameterizations as well as nonparametric approaches in Materials and Methods (see also *Robustness Checks*).

The simple premise behind this model, as shown in Fig. 3, is that the segregative mother or father "sends" their daughter to female-typed subclasses and their son to male-typed subclasses. If reproduction is indeed gendered in this way, it suggests that families are doing segregative work, although of course the GSS data cannot tell us how this work is getting done. The objective of our analysis is to ascertain whether the extent of such segregative transmission is changing over time.

Throughout our exposition, we will refer to "segregative transmission," "segregative parents," or a "segregative turn," a nomenclature that is intended to describe a demographic association without making attributions about the behavior that underlies it. There are four distinct classes of mechanisms that could, in principle, stand behind the rise of segregative processes represented in Fig. 3. The first mechanism, that of parental socialization, has parents changing their socialization, human capital investments, or networking in ways that promote the transmission of male-typed occupations to sons and female-typed occupations to daughters. It is also possible, however, that parents show up as increasingly segregative not because they have changed how they treat their children but because children are changing how they react to the parental occupations presented to them. For example, sons may increasingly reject fathers who present an "irrelevant" female-typed occupation, while daughters may increasingly cathect to fathers with such occupations (i.e., changing offspring receptivity). The third possibility is that a status group, regional group, or family type that tends to be especially son-biased is growing larger in size. This compositional process means that fathers, for example, may be showing up as increasingly biased only because the class of fathers predisposed to being biased constitutes a growing share of the total population. The final possibility is that nonfamilial agents, such as hiring managers, are increasingly receptive to son-biased transmission and are thereby enabling socialization practices that have long been segregative (i.e., labor market receptivity). Although our final set of analyses will provide some suggestive hints about the roles of these four mechanisms, the bulk of our analyses are oriented toward identifying whether reproduction is growing more segregative (in this narrowly demographic sense) rather than identifying the processes that may account for that result.

We build our model around three types of reproductive parameters. To simplify the exposition, we introduce our parameterization with our aggregated 6-category scheme (Fig. 4), but our comments extend straightforwardly to our 16-category scheme. The six-category scheme is used for our analyses that exploit the data on mother's occupation available in the GSS from 1994 to 2018.

The rows in Fig. 4 pertain to the parent's subclass, and the columns pertain to the offspring's subclass. In Fig. 4 *A*–*C*, we have represented three different intergenerational effects (i.e., dual reproduction, gendered class reproduction, and gender-typing reproduction), each of which is set up to capture a type of segregative flow in which sons are disproportionately sent to male-typed subclasses and daughters are disproportionately sent to female-typed subclasses (as indicated by the shading). The matrices in Fig. 4 pertain to a generic parent who may be either the mother or the father. It is not necessary to define a separate parameter matrix for mothers and fathers because the types of mobility flows that are segregative (e.g., sending sons disproportionately to male-typed subclasses) do not depend on the gender of the parent. When we fit this term in our two-parent dataset, we do so for mothers and fathers alike, thus making it possible to test whether either of them has segregative effects.

The first set of terms in Fig. 4, dual reproduction effects, capture the excess densities on the diagonal cells representing the intergenerational transmission of same-typed occupations within a big class (i.e., subclass inheritance). We have used differential shading to indicate that the segregative parent is more likely to pass on male-typed occupations to sons and female-typed occupations to daughters. In the stylized example of Fig. 4*A*, a parent who is a nurse (i.e., a female-typed profession) is more likely to pass on nursing to their daughter than to their son, while a parent who is a doctor (i.e., a male-typed profession) is more likely to pass on doctoring to their son than to their daughter. This tendency for "gender-appropriate" reproduction is likewise depicted within the nonmanual and manual classes. For mothers and fathers alike, there are two segregative parameters of interest: 1) the propensity to pass on female-typed subclasses disproportionately to daughters and 2) the propensity to pass on male-typed subclasses disproportionately to sons. It bears noting that both mothers and fathers may be segregative, neither may be segregative, or only mothers or fathers may be segregative.

The second class of parameters, labeled gendered class reproduction, pertains to the excess densities that are off the micro-diagonal but still on the broader diagonal pertaining to big-class reproduction. The key idea here is that big-class reproduction is segregative insofar as children relocate to "gender-appropriate"

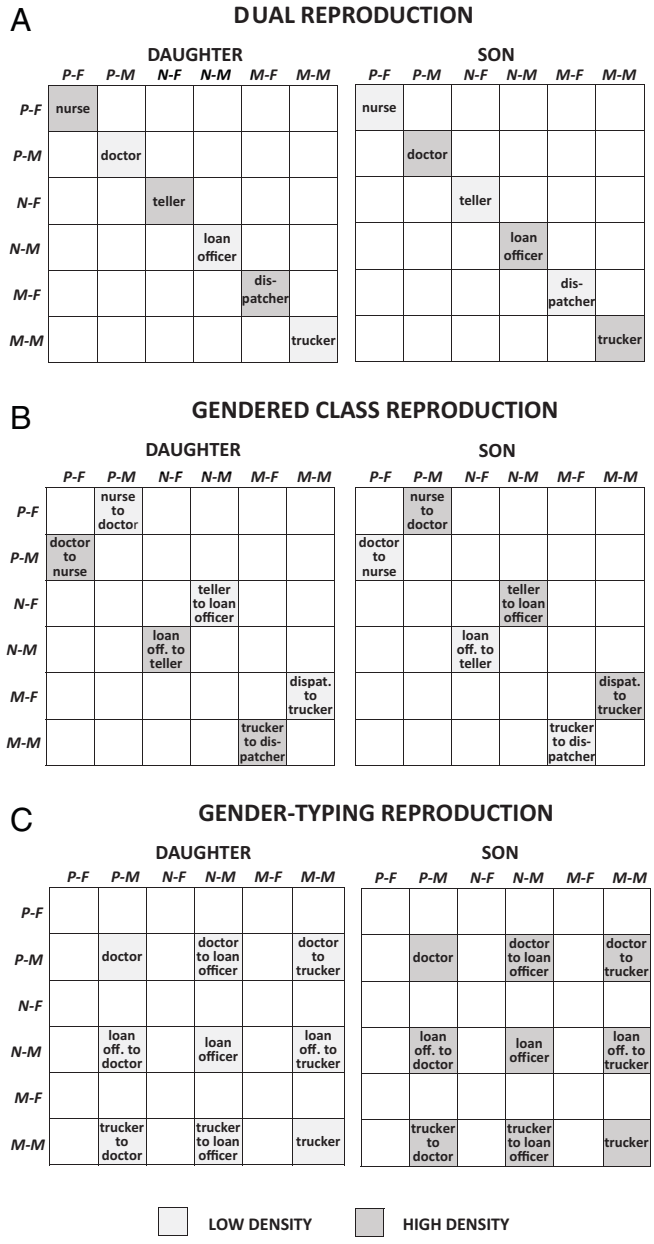

Fig. 4. Illustration of (*A*) dual reproduction parameters, (*B*) gendered class reproduction parameters, and (*C*) gender-typing parameters. P-F, female-typed profession; P-M, male-typed profession; N-F, female-typed nonmanual; N-M, male-typed nonmanual; M-F, female-typed manual; M-M, male-typed manual. The listed occupations are examples of the types of inheritance or mobility that each cell represents. The hypothesis that transmission is gender-biased is represented by differential shading. For each of the three types of reproduction, the preferred model fits 1) a set of effects that capture the base structure of the parent–child association (for sons and daughters alike) and 2) a set of gender-deviation terms that is layered on top of those base effects (as represented by *A*–*C*). The base effects, which pertain to the structure of intergenerational association for daughters and sons alike, include six parameters for dual reproduction (for each parent), six parameters for gendered class reproduction (for each parent), and one parameter for gender-typing reproduction (for each parent). The gender-deviation effects for dual and gendered-class reproduction pertain to the excess segregative densities (for sons or daughters) across all same-typed subclasses. There are two deviation effects for dual reproduction (one each for female-typed and male-typed reproduction), two deviation effects for gendered class reproduction (one each for female-typed and male-typed reproduction), and one deviation effect for gender-typing reproduction (see *Materials and Methods* for equation form).

subclasses within their big class of origin. As illustrated in Fig. 4*B*, a doctor's daughter may relocate to nursing (whereas their son does not), while a nurse's son may relocate to doctoring (whereas their daughter does not). Likewise, a bank teller's son may relocate to loan officer (because it is male-typed), while a loan officer's daughter may relocate to teller (because it is female-typed). These various types of relocation allow big-class reproduction to happen in gender-appropriate ways. For mothers and fathers alike, there are two parameters of interest: 1) the disproportionate tendency of daughters to move from male-typed to female-typed subclasses and 2) the disproportionate tendency of sons to move from female-typed to male-typed subclasses.

The third and final class of segregative parameters, labeled gender-typing reproduction, allows for segregative processes outside of the parent's big class (Fig. 4*C*). The shading in Fig. 4*C* again represents the hypothesis that parents are more likely to pass on male-typed subclasses to their sons than to their daughters. If this hypothesis is on the mark, then processes of class mobility (as well as class inheritance) are contributing to the persistence of segregation.

We will apply this model to a five-way table formed by cross-classifying mother's subclass, father's subclass, offspring's subclass, offspring's gender, and period. Although the three sets of segregative parameters represented in Fig. 4 are of key interest, a credible set of estimates entails embedding them in a model that allows for the usual set of nuisance controls, including 1) the assortative mating association between mother's and father's subclass (and variability in that association by period and the child's gender) and 2) the labor market demand association between child's subclass and gender (and variability in that association by period). By parsing out those potentially confounding marginal effects, we can isolate the effects on segregation of the three types of segregative parameters represented in Fig. 4 (see Materials and Methods for the same model in equation form).

Because this hybrid model differs from conventional mobility models, it is important to assess whether it fits. In Fig. 5, we present results from 1) a model that includes occupational measurements for both mothers and fathers (thereby restricting the analysis to 1994 to 2018) and 2) a model that only includes occupational measurements for fathers (thereby increasing coverage to 1972 to 2018). We have collapsed across periods for both models and thus analyzed either a four-way table of parent–offspring data ($6 \times 6 \times 6 \times 2$) or a three-way table of father–offspring data ($16 \times 16 \times 2$). As shown in the *Left panel* of Fig. 5, the expected values for the four-way table closely track the observed values, no matter whether the gender-typing of the offspring's occupation does or does not differ from that of the mother, the father, or both the mother and father. The analogous conclusion holds for the three-way table in the *Right panel* of Fig. 5, although omitting information on the mother's occupation does, as expected, increase the residuals nontrivially. For both tables, most of the estimates are very close to the 45° line, with only moderate fanning when cells counts are small. These results give us confidence that our mobility estimates, to which we now turn, represent the structure of the data well.

In Table 2, we present a summary measure of the segregative effects of mothers and of fathers, a measure secured by constraining the five estimates of segregative transmission to be the same (i.e., two dual reproduction effects, two gendered class reproduction effects, and one gender-typing reproduction effect). This summary estimate can be understood as the average amount by which parents 1) pass on male-typed occupations disproportionately to sons and 2) pass on female-typed occupations disproportionately to daughters (with positive estimates implying segregative effects and negative estimates implying integrative ones). We find that present-day fathers are 1.22 times more likely ($e^{.196} = 1.22$) to pass on gender-appropriate occupations than gender-inappropriate ones. By contrast, the corresponding present-day

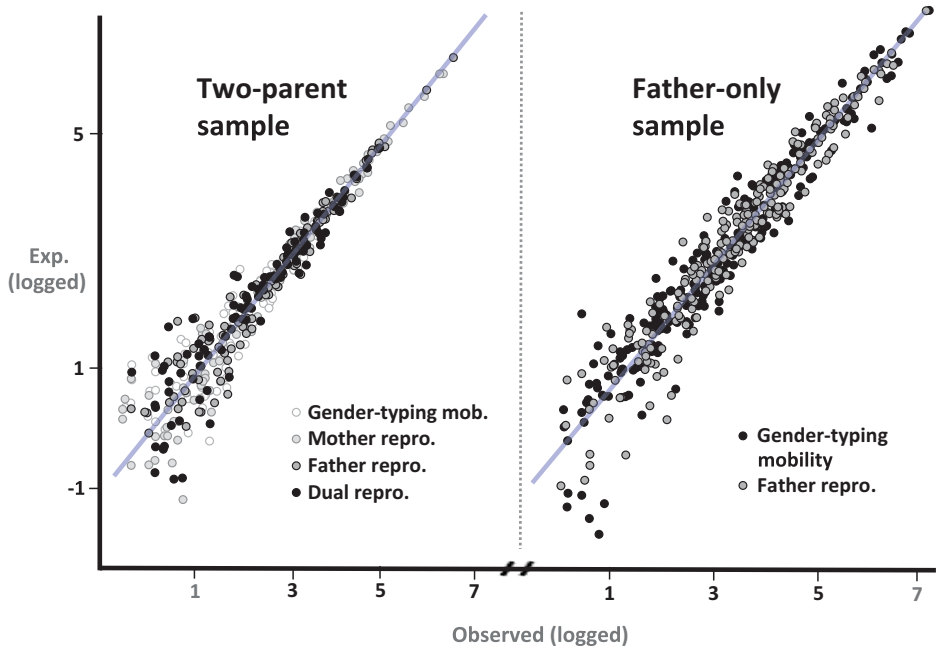

Fig. 5. Model fit for two-parent and father-only samples. Analysis is based on GSS data collapsed across periods. The cells in the 6 × 6 × 6 × 2 (two-parent) and 16 × 16 × 2 (father-only) arrays are distinguished by type of gender-typing reproduction (i.e., reproducing mother's typing, father's typing, both forms of typing, or neither form). The observed and expected values are close to the 45° line (albeit with moderate fanning for cells with small observed values). Test statistics are $L^2 = 400$, df = 322, and BIC = −2,640 (two-parent sample) and $L^2 = 2{,}614$, df = 416, BIC = −1,760 (father-only sample). For details, see *Materials and Methods*.

estimate for mothers ($e^{-.057} = 0.94$) implies that they are effectively gender-blind, privileging neither sons when they occupy a male-typed position nor daughters when they occupy a female-typed one. Even more importantly, Table 2 shows that fathers have become increasingly segregative since the 1990s, a result that is consistent with the segregative-father hypothesis (see Materials and Methods for further discussion of the summary measure).

Extending the Time Series. Because the GSS did not start collecting data on mother's occupation until 1994, the preceding analysis cannot be extended into the period before the stalling out began. To cast further light on the intergenerational sources of the U-turn, we have no choice but to rely on the GSS's earlier father-only samples.

This is not as problematic as might be imagined. The leading result from the last section—that mothers are effectively gender-blind—is methodologically convenient because it means that they can be omitted from the model without necessarily contaminating our estimates of the segregative effects of fathers. As Table 2 reveals, the segregative effect for fathers is indeed unchanged when the same data (for 1994 to 2018) are reanalyzed after collapsing over mother's occupation (see model 2). This result gives us confidence in the father-only estimates for the full time series (1972–2018) that are presented in the far-right columns of Table 2. Although we cannot know whether mothers in the earlier years were also gender-blind, any possible biasing effects of omitting mothers are dampened by their reduced labor force participation in the 1970s and 1980s (38). Even if mothers were not similarly gender-blind in the 1970s and 1980s, their biasing capacity is still reduced, in other words, because fewer mothers were in the labor force then (and thus fewer can contribute to a possible contaminating effect).

This is all to suggest that models 3 and 4, which cover the last half-century of intergenerational transmission, are potentially very revealing. Because the father-only sample is much larger and because we are no longer disaggregating by mother's occupation, we can now supplement our 6-category analysis (model 3) with a more detailed 16-category analysis (model 4). As Table 2 shows, the detailed classification picks up a stronger segregative effect in the 2010s (i.e., $e^{.284} = 1.33$) and, just as importantly, uncovers an almost equally strong segregative effect in the 1970s (i.e., $e^{.244} = 1.28$). The resulting estimates move in lock-step with the U-turn in segregation and thereby provide additional support for the segregative-father hypothesis.

Table 2. Single-parameter estimates of segregative reproduction

	Two-parent sample: Model 1		Two-parent sample	Father-only sample	
Time	MO-6	FA-6	Model 2 (FA-6)	Model 3 (FA-6)	Model 4 (FA-16)
1970s				0.022	0.244^{**c}
1980s				0.134^{*b}	0.111^{+a}
1990s	0.081	−0.102	−0.084	−0.037	−0.051
2000s	−0.045	0.052	0.039	0.013	0.103^{a}
2010s	−0.057	0.196^{**c}	0.187^{**b}	0.211^{***c}	0.284^{***d}

The label MO-6 references the effects of mothers under the six-category class scheme (with the remaining labels likewise referring to the parent and classification detail). Positive estimates imply segregative effects, and negative estimates imply integrative effects. $^{+} = P < 0.1$ (two-tailed test); and $^{*} = P < 0.05$; $^{**} = P < 0.01$; $^{***} = P < 0.001$ (two-tailed tests). The corresponding tests for difference with the 1990s estimate are represented with superscripted letters ($^{a} = P < 0.1$; $^{b} = P < 0.05$; $^{c} = P < 0.01$; $^{d} = P < 0.001$). $L^2 = 1{,}029$ (with 966 df) for model 1, $L^2 = 156$ (with 108 df) for model 2, $L^2 = 277$ (with 180 df) for model 3, and $L^2 = 4{,}192$ (with 2,080 df) for model 4.

Table 3. Sources of segregative reproduction in father-only sample (16-category)

Mechanism	Decade-specific					Polynomial			Consistent with U-turn?
	1970s	1980s	1990s	2000s	2010s	Intercept	Time	Time^2	
Gender-typing reproduction	0.524*	0.263^{+}	0.086	0.187	0.481^{**a}	1.052*	−0.611*	0.099*	Yes
Dual reproduction									
Female-typed subclasses	0.052	−0.184	−0.222	−0.233	0.270^{+b}	0.595	−0.620*	0.109*	Yes
Male-typed subclasses	0.295^{a}	0.280^{*b}	−0.142	0.374^{**c}	0.648^{***d}	0.983*	−0.686**	0.125**	Yes
Class reproduction									
Mobility to female-typed subclasses	0.142	−0.054	0.009	−0.104	−0.291^{*a}	0.108	−0.007	−0.013	No
Mobility to male-typed subclasses	0.541	−0.073	−0.013	−0.019	0.911^{**b}	1.523^{+}	−1.189*	0.209*	Yes

Positive estimates imply segregative effects, and negative estimates imply integrative effects. $^{+}= P < 0.1$ (two-tailed test); and $^{*}= P < 0.05$; $^{**}= P < 0.01$; $^{***}= P < 0.001$ (two-tailed tests). The corresponding tests for difference with the 1990s estimate are represented with superscripted letters ($^{a}= P < 0.1$; $^{b}= P < 0.05$; $^{c}= P < 0.01$; $^{d}= P < 0.001$). $L^2 = 4{,}128$ (with 2,060 df) for decade-specific model, and $L^2 = 4{,}138$ (with 2,070 df) for polynomial model.

As discussed in Appendix F of *SI Appendix*, a U-shaped trend also appears when we disaggregate across racial-ethnic groups, although the trends are far noisier because the sample sizes for some groups are very small (*SI Appendix*, Table S13). We discuss these results and other sources of heterogeneity in our subsequent analyses of robustness.

The Breadth of the Segregative Turn. We next examine the types of reproductive processes lying behind the U-turn. The virtue of our categorical approach is that it allows us to distinguish among the many types of segregative transmission that are potentially in play. To this point, our summary measures have not exploited that advantage, given that they constrain the different types to have the same effect. As shown in Table 3, we next estimate separate parameters for each of the five types of transmission, presenting them in both their raw form and after implementing a polynomial smooth (across the five decades). The results in this table indicate that a U-turn is widely in play. The polynomial estimates, for example, reveal a U-turn for four of the five types of reproduction (with the only exception being that present-day fathers are not channeling daughters disproportionately into female-typed subclasses). This U-turn is especially prominent for the two parameters capturing disproportionate channeling into male-typed subclasses (either via enhanced inheritance or enhanced intraclass mobility).

When the estimates for the most recent decade are plotted, it becomes clear just how segregative fathers have become. In the *Top panel* of Fig. 6, we see that sons are now 1.62 times more likely than daughters to inherit their father's (typically male) gender type, a weakening of intergenerational transmission that drives the gender-typing effect for daughters down to zero. Likewise, sons are 2.49 times more likely than daughters to move to male-typed occupations within their father's big class, and they are 1.91 times more likely than daughters to inherit their father's male-typed subclass. The latter effect is so powerful that for some occupations the point estimates imply that women tend to disinherit their father's male-typed subclass. By contrast, daughters with fathers in female-typed subclasses tend to overinherit, although they do so by a factor that is much smaller than that pertaining to their underinheritance of male-typed subclasses (and is significantly different from zero only at $\alpha = 0.1$). Because the strongest segregative effects pertain to transitions into male-typed subclasses, our intergenerational results are likely closely related to the asymmetry of Fig. 2*B*, where we showed that the stall is mainly driven by the declining flow of women into male-typed occupations (4). The simple conclusion is as follows: if the stall is to be successfully countered, we may need to target this disruption in the transmission of male-typed occupations to daughters.

Explaining the Stall. To this point, we have provided evidence of a U-turn in intergenerational effects that is suspiciously similar to the U-turn in segregation, and we have found that these effects have the same asymmetric composition (i.e., pertaining mainly to male-typed occupations) as the trend in segregation. We have not, however, examined whether a sizable share of the segregation trend can be attributed to changes in intergenerational processes.

The latter task can be taken on by simulating the segregation trend under two counterfactuals. We want to know 1) whether the decline in segregation between the 1970s and 1990s would have been dampened had fathers not become integrative and 2) whether the stall in segregation between the 1990s and 2010s would have been less prominent had fathers not become segregative. As indicated in Fig. 7, the first trend line is generated by fixing the single-parameter estimate of segregative reproduction at the 1970s value, and the second trend line is generated by fixing the single-parameter estimate of segregative reproduction at the 1990s value (using the father-only sample and the 16-category scheme). Because all other parameter estimates are retained (in each of our two simulations), the resulting trend lines register the effects of eliminating change in segregative processes (see Materials and Methods for details). We find that these changes account for 34% of the initial decline in segregation (between the 1970s and 1990s) and for 47% of the foregone continuation of this decline (between the 1990s and 2010s). Although this is a purely mechanical accounting estimate, it supports the conclusion that intergenerational processes may lie behind much of the segregation trend.

Robustness Checks. The estimates presented here rely on a host of operational decisions that have been assessed with robustness checks discussed in *SI Appendix*, Appendixes C–F. The purpose of this section is to provide a roadmap of these checks, to lay out the rationale for them, and to indicate our bottom-line conclusions and implications.

It is useful to begin by considering alternative ways of assessing trend. Throughout our analyses, we examined trends by cross-classifying by period rather than birth cohort, an analytic decision that could be consequential. Because the GSS sample is relatively

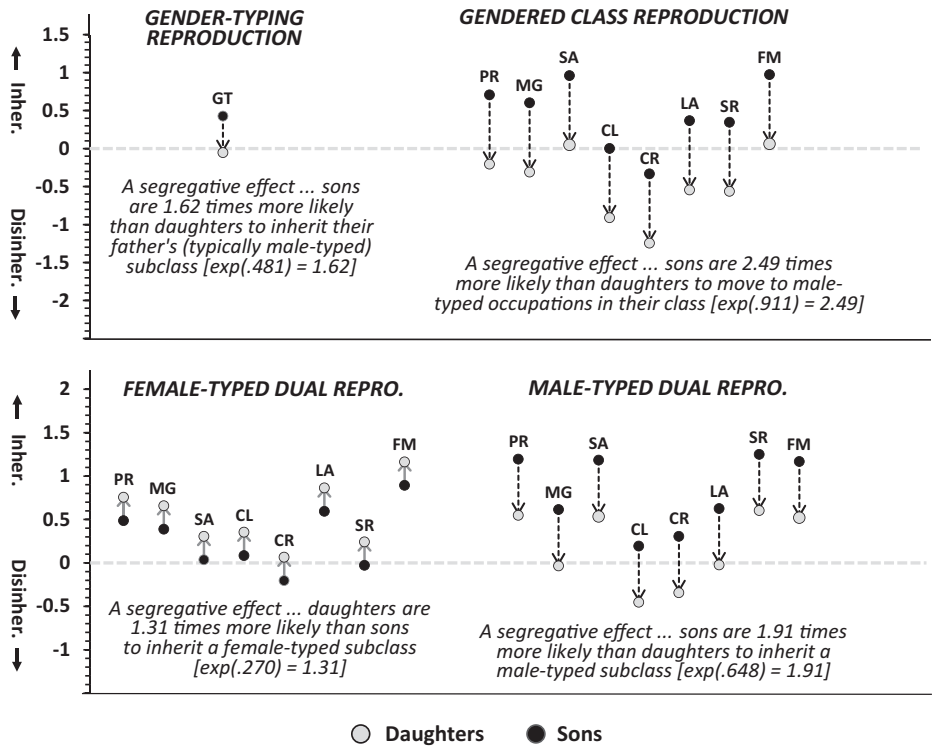

Fig. 6. The segregative dynamics of intergenerational transmission in the 2010s. PR, professional; MG, managerial; SA, sales; CL, clerical; CR, craft; LA, laborer; SR, service; FM, farm. To aid in presentation, the SA estimate has been divided by 2 (for male-typed dual reproduction), and the FM estimates have been divided by 2 (for male-typed dual reproduction and gendered class reproduction) and 3 (for female-typed dual reproduction). See Table 3 for the underlying estimates.

small, it is not possible to distinguish period and cohort effects or, more generally, to estimate an age–period–cohort model or apply bounding or graphing methods (39). Although birth cohorts are often used to analyze trends in occupational mobility (40), we opted to present our results by period because doing so aligns with a gender segregation literature that is almost entirely period-based. We have nonetheless reproduced our core conclusions with a specification that distinguishes between prewar, wartime, Baby Boom, Gen X, and Millennial birth cohorts (*SI Appendix*, Appendix C). We have likewise verified that our results are not an artifact of cross-period variability in the age composition of the samples (*SI Appendix*, Appendix C).

We have additionally carried out a range of robustness checks assessing the effects of different occupational classification schemes. We have verified, for example, that the results for the father-only samples hold up for both our 6-category and 16-category schemes (whereas all two-parent analyses are based exclusively on the 6-category scheme because they entail smaller samples and highly disaggregated tables). As shown in Table 2, the detailed 16-category scheme more successfully captures the channeling of male-typed occupations to sons, but even so our core results for the father-only analyses also register in our 6-category analyses. These analyses are discussed in *SI Appendix*, Appendix D. For the more detailed 16-category scheme, a larger number of zero cells appear, and we have therefore experimented with models using different zero-cell treatments, all of which yielded results similar to those reported here (*SI Appendix*, Appendix D). We have

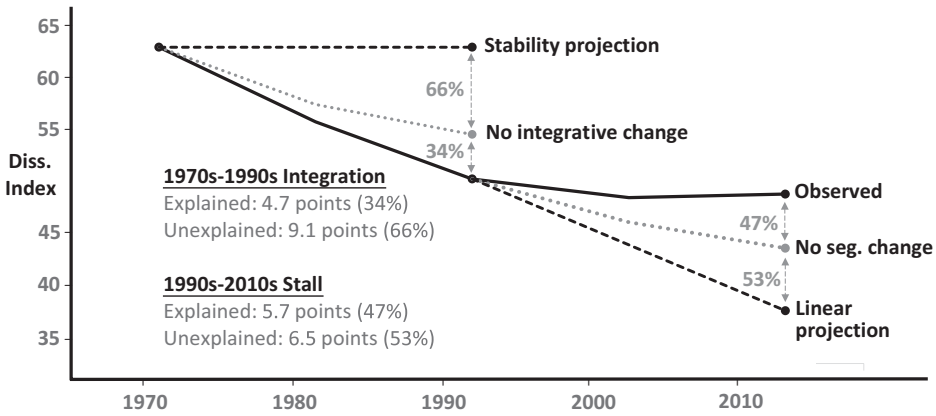

Fig. 7. Estimated trends after eliminating changes in the gender bias of fathers during the egalitarian takeoff and the stalling out. The "no integrative change" trend line is generated by fixing the father-only estimate of segregative reproduction at the 1970s value and retaining other parameter estimates (model 4 in Table 2). The "no segregative change" trend line is generated by fixing the father-only estimate of segregative reproduction at the 1990s value and retaining other parameter estimates (model 4 in Table 2).

further experimented with different crosswalks for reconciling occupational classification schemes over time (Materials and Methods and *SI Appendix*, Appendix D). The core results again replicate across these different approaches to reconciliation.

It is also useful to examine trends in intergenerational transmission with a nonparametric approach. This robustness check is important because of complications in interpreting parameters from nonlinear probability models (41). We have addressed such worries here by showing that our core results also emerge under nonparametric approaches. In Table S11 of *SI Appendix*, we present ratios of outflow rates for sons and daughters, ratios that reveal the extent to which 1) sons are more likely than daughters to inherit or move to male-typed occupations and 2) daughters are more likely than sons to inherit or move to female-typed occupations. Although these ratios of rates do not net out all potentially contaminating effects, they are useful descriptive assessments that, as shown in Appendix E of *SI Appendix*, yield trends very similar to those presented in Table 3.

We have also examined trends under a wide range of parametric specifications. We have, for example, estimated models that allow parents to have interactive as well as main effects on their children. The models presented in Table 2 do not, by contrast, allow the effects of the mother's occupation to depend on the father's occupation (and vice versa). Although we do not have enough power to estimate a full constellation of such assortative mating effects, Table S12 of *SI Appendix*, provides illustrative results from a model distinguishing between modern and traditional families (with this distinction resting on whether the mother's occupational status exceeds that of the father). It is plausible that our core finding—that fathers are increasingly son-biased—might at least be overturned in modern families with supposedly "enlightened" fathers. The estimates indicate, to the contrary, that fathers in both types of families are increasingly segregative (see Materials and Methods for a discussion of other relevant specifications).[†]

In our next set of robustness checks, we sought to cast light on the sources of son-biased reproduction. Although a full accounting of mechanisms is beyond the scope of this paper, we are able to address some of the mechanisms that we discussed earlier (i.e., parental socialization, offspring receptivity, compositional processes, and labor market receptivity). The labor-market-receptivity mechanism is arguably the most threatening because it shifts the focus from exclusively family-based processes (e.g., parental socialization) to those that feature the interaction between family and labor market processes. It is possible, for example, that present-day fathers are more likely to hold male-typed occupations that are resistant to hiring women via parental networks (e.g., technology occupations). If this were the case, it could account for some of the son-biased transmission that we have observed, a type of channeling that would then be attributable to the new occupational hiring environment that fathers are facing. Because the GSS samples are quite small, we cannot easily address this hypothesis by further disaggregating our subclasses (especially given the lack of strong priors about which disaggregations should be made), but we can at least reweight to ensure that each subclass retains the same occupational composition across decades. This analysis, which is described in Appendix F of *SI Appendix*, also allows us to remove other contaminating effects of changes in occupational composition, including the prominent decline of farming occupations (42). The results do not change appreciably under this reweighting.

We have also carried out robustness checks relevant to the compositional mechanism. It is possible, for example, that cross-decade changes in the US household structure or in the racial-ethnic composition of the US labor force account for some of the segregative turn reported here. If the propensity for son-biased transmission varies across racial or ethnic groups (or any other subpopulations), then changes in the relative sizes of those groups could generate trend in segregative effects. To examine this possibility, we have rerun our core models for each racial-ethnic group separately (*SI Appendix*, Table S14), and we have also reestimated trends after reweighting the data to eliminate changes in racial or ethnic composition (*SI Appendix*, Table S13). We have additionally examined intergenerational transmission among mother-headed families (because they do not appear in either our two-parent or father-only samples). We found no evidence that compositional changes by race, ethnicity, or household structure account for our results (*SI Appendix*, Appendix F). The latter assessment is not definitive, however, because the GSS sample is small and because GSS race measurements are inadequate in early decades.

There is, then, a special warrant for treating our last round of checks cautiously. Because there are many relevant types of heterogeneity, and because our assessments of their effects are imperfect, it remains unclear whether the rise of son-biased transmission reflects changes in the population of parents, changes in how the labor market responds to the investments of parents, or various other changes that might be characterized as omitted heterogeneity. We return to this point in *Discussion*.

Discussion

The studies of occupational mobility and of gender segregation have long been viewed as distinct pursuits best taken up by field specialists. This division of labor has not served either field well.

Within the field of occupational mobility, the standard big-class categories do not capture the entrenched gender-typing of occupations, and analysts have had to ignore the interactions between the "gender" of social classes, the gender of parents, and the gender of their children. This operational decision has in turn concealed changes in social mobility and led to the conclusion that the mobility process was unvarying even as women streamed into the labor force in record numbers (26, 43). We have showed that important changes in intergenerational processes come into focus when big-class categories are reconstituted to take gender into account.

This division of labor has likewise been unhelpful in understanding the recent stalling out of trends in gender segregation. Although the stalling out is a common topic of research, its relationship to family investments and dynamics has not been frequently considered. Because parents are charged with 18 y (or more) of socializing, training, and otherwise cultivating their children, it seems likely that intergenerational processes are at least partly implicated in the stalling out.

The results reported here are consistent with that supposition. Using a model fine-tuned for capturing segregation-inducing forms of transmission, we have uncovered a strong link between intergenerational processes and the U-turn in gender segregation. In recent decades, mothers have been transmitting occupations in a gender-neutral way, whereas fathers have transitioned from gender-neutral to son-biased transmission. This segregative turn among fathers accounts for nearly half (i.e., 47%) of the stall in the gender segregation trend between 1990 and 2018.

[†]We are grateful to one of our reviewers for suggesting this analysis. With larger samples, it will be possible to estimate more revealing models, including ones examining the effects of different gender-typing combinations (e.g., both parents in male-typed subclasses, both parents in female-typed subclasses, both parents in gender-appropriate subclasses, and neither parent in gender-appropriate subclasses).

The microlevel mechanisms behind these results remain unresolved. As discussed in the preceding section, our results could be attributed to various types of omitted heterogeneity, at least some of which entail changes in how nonfamilial institutions or agents (e.g., hiring managers) process familial outputs. Although it is important to continue to search for such nonfamilial processes, it is also important to examine possible familial sources of son-biased transmission. These familial processes may entail either supply-side changes in the behavior of children or demand-side changes in the behavior of parents. On the children's side of the equation, the key change is that they now often have at least two parental careers from which to choose (e.g., a mother's and a father's), whereas previously the father's career was typically the only one that children experienced quite directly. It is plausible that daughters, when confronted with a viable career option from a same-gender role model, will be less likely to cathect to a different-gender role model (unless the father has feminist credentials by virtue of holding a female-typed occupation). This dynamic, if indeed in operation, would show up in our intergenerational models as growing son-biased transmission of male-typed occupations.

The foregoing supply-side account emphasizes how daughters react to the new two-career family and absolves fathers of responsibility for the rise of son-biased transmission. The analogous demand-side account, whereby fathers turn away from their daughters, is also plausible. As two-career families become the norm, a new division of labor may have emerged in which 1) mothers counsel daughters about building careers in a gender-biased and high-harassment labor market and 2) fathers counsel sons about building careers in a labor market in which men, now no longer wholly protected from competition, are facing stiff challenges from well-trained women. This formulation does not have to mean that backlash-animated fathers are increasingly committed to protecting their sons against the incursion of women. Although that is one possible account, a more benign version of this hypothesis has fathers less likely to champion career-oriented daughters in a new world in which virtually all women—not just the "brilliant few" with the temerity to challenge gender norms—are now oriented toward the formal labor market (23). The perverse effect, in other words, of weakened barriers to labor market entry is that daughters are now less likely to pass the very stringent brilliance threshold that gender-biased fathers historically applied in meting out support for a daughter interested in "men's careers." The latter formulation, while somewhat more benign, still implies that fathers are hardly leading agents of egalitarian change.

These comments are of course highly speculative. If additional research shows that familial processes are indeed driving the rise of segregative reproduction, the next step is to better understand those processes. It will be important, for example, to examine 1) how children growing up in dual-career households are evaluating the multiple role models now available to them, 2) whether mothers in male-dominated settings are increasingly counseling their daughters to avoid high-harassment settings, 3) whether fathers in male-dominated occupations are increasingly oriented to protecting their sons against the incursion of women, 4) whether daughters exposed to parental "overwork" in male-dominated occupations are turning away from such occupations (and stressing, for example, the importance of work-life balance), and 5) how divorce, remarriage, and family blending affect processes of gender-biased transmission. The results from these microlevel analyses may make it possible to build out a new suite of targeted familial interventions that supplement conventional workplace policy.

Materials and Methods

Data. The GSS administers questions about living conditions, identities, behaviors, and attitudes to a representative multistage sample of US adults. The survey was delivered annually between 1972 and 1993 and in even-numbered years thereafter. For the analyses presented here, two overlapping GSS samples were constructed. The first sample, the two-parent sample, pertains to the 1994 to 2018 GSS surveys (when information on mother's occupation is available) and is restricted to women and men in the labor force between 25 and 64 y old (inclusive) without missing data on age, gender, occupation, father's occupation, and mother's occupation ($n = 12{,}301$). The second sample, the father-only sample, pertains to the 1972 to 2018 GSS surveys and is restricted to women and men in the labor force between 25 and 64 y old (inclusive) without missing data on age, gender, occupation, and father's occupation ($n = 35{,}981$). For both samples, Ballot D cases are excluded in 2006, as father's occupations are not collected on that ballot (26). To account for the GSS's sampling design, the weight variable WTSSALL is used in all analyses for both samples (see *SI Appendix*, Table S1, for descriptive statistics for both analytic samples). Although the 2020 GSS is available, it is not included in our analytic sample because of the gender-specific effects of the pandemic on labor force participation and because the GSS shifted in 2020 from face-to-face to telephone recruitment and interviewing (by virtue of the pandemic). In Appendices A, B, and D of *SI Appendix*, supplementary analyses of missing data and occupational coding are provided.

Segregation Concept. We measure segregation using the index of dissimilarity (D) and a margin-free measure (A). The index of dissimilarity is defined as follows:

$$D = \sum_{j=1}^{J} |(W_j/W) - (M_j/M)| \times 100/2,$$

where J refers to the total number of occupations, W_j and M_j refer to the number of women and men in the jth occupation, and W and M refer to the number of women and men in the labor force. We also measure segregation with a margin-free measure (44):

$$A = exp(1/J \times \sum_{j=1}^{J}(ln(W_j/M_j) - [1/J \times \sum_{j=1}^{J} ln(W_j/M_j)])^2)^{.5},$$

where all symbols are defined as above. The segregation trends presented in Fig. 1 pertain to the 1972 to 2018 GSS respondents in the labor force between ages 25 and 64 (inclusive) with nonmissing data on age, gender, and occupation ($n = 44{,}640$). As Fig. 1 reveals, the U-turn shows up in both measures but more prominently for A than for D. The results are very similar when the two segregation measures are applied to our father-only analytic sample (*SI Appendix*, Fig. S1).

The Mobility Models. To ease the exposition, we present a mobility model for 1) a single decade and 2) our aggregated six-category class scheme. We also simplify the exposition by representing the six-category class scheme as the cross-classification of three big classes (1, professional; 2, other nonmanual; 3, manual) and two categories of gender-typing (1, female; 2, male). We present a two-parent model for a two-gender data array (1, women; 2, men), but our setup is easily recast for a simpler father-only array. The expected values for this base model can be represented as follows:

$$\begin{aligned} E(X_{ijklmno}) = {} & \alpha_{ijklo}\beta_{mno} && \leftarrow \text{marginal terms} \\ & \times\ \gamma_{jn}\delta_{ln}\zeta_{jno}\eta_{lno} && \leftarrow \text{gender-typing rep.} \\ & \times\ \kappa_{ijmn}\lambda_{ijmno} && \leftarrow \text{mother's class rep.} \\ & \times\ \mu_{klmn}\nu_{klmno} && \leftarrow \text{father's class rep.,} \end{aligned}$$

where i indexes the mother's big class, j indexes the gender type of the mother's subclass, k indexes the father's big class, l indexes the gender type of the father's subclass, m indexes the offspring's big class, n indexes the gender type of the offspring's subclass, and o indexes the offspring's gender. The two sets of marginal terms fit the association among origins (α_{ijklo}) and among destinations (β_{mno}), while the balance of terms pertain to the structure of intergenerational association. For each type of intergenerational association, we fit a set of terms that characterize the general form of the association (for sons and daughters alike),

and we then layer on top of those effects a set of gender-deviation terms that capture possible segregative effects as parsimoniously as possible. We use omitted-category normalizations throughout to identify all effects. For purposes of clarity, we present both the base and gender-deviation terms in the above equation, even though the latter encompass the former. The structure of the intergenerational association, which is represented generically above, takes the form represented in Fig. 4 and is described in detail below.

Gender-typing reproduction (Fig. 4C). The two base gender-reproduction terms (γ_{jn}, δ_{ln}) allow for the transmission of gender-typing "tastes" via an extra density of observations in cells where $j = n = 2$ (for mothers) and $l = n = 2$ (for fathers). The two gender-deviation terms (ζ_{jno}, η_{lno}), which are overlaid on the base terms, capture the extent to which reproduction is segregative because parents are son-biased (i.e., tastes are more reliably transmitted to sons than to daughters). This particular parameterization of gender-typing reproduction is of course but one of many. If gender-typing reproduction were instead parameterized as an extra density of observations in cells pertaining to the same parent–child typing ($j = n$ for mothers and $l = n$ for fathers), the resulting estimate would be half as large. The availability of this alternative parameterization, which fits the data equally well, complicates the interpretation of trends in gender-typing reproduction because any increase in the density of observations in the dark-shaded cells of Fig. 4*C* could be equally represented as an increase in male-typed and female-typed reproduction. Although in principal this distinction could be consequential for our single-parameter analyses (as they rely on cross-parameter equality constraints that are affected by a change in scale), in practice we have found that the substance of our conclusions is not affected by such reparameterizations.

Dual reproduction (Fig. 4A). In models applied to our six-category class scheme, 12 base effects for dual reproduction are estimated, one for each of the six subclasses on the main diagonal of the mother-by-offspring tables (κ_{1111}, κ_{1212}, κ_{2121}, κ_{2222}, κ_{3131}, κ_{3232}) and one for each of the six subclasses on the main diagonal of the father-by-offspring tables (μ_{1111}, μ_{1212}, μ_{2121}, μ_{2222}, μ_{3131}, μ_{3232}). Although the base effects fit all six cells on the main diagonal (for each parent), the overlaid gender-deviation effects are constructed more parsimoniously to isolate segregative deviations. The mother's gender-deviation term (λ_{ijmno}) captures two types of segregative effects: 1) the extent to which mothers pass on the three female-typed subclasses disproportionately to daughters (i.e., an excess density of observations when $i = m$, $j = n = 1$, and $o = 1$) and 2) the extent to which mothers pass on the three male-typed subclasses disproportionately to sons (i.e., an excess density of observations when $i = m$, $j = n = 2$, and $o = 2$). We thus estimate two gender-deviation effects for mothers, one allowing for gender differences in the transmission of male-typed subclasses and another allowing for gender differences in the transmission of female-typed subclasses. The gender-deviation terms for fathers are directly analogous.

Gendered class reproduction (Fig. 4B). The kappa term for mothers (κ_{ijmn}) also captures a full set of six base effects for gendered class reproduction, three pertaining to male-typed to female-typed moves within each of the three big classes (κ_{1211}, κ_{2221}, κ_{3231}) and another three pertaining to female-typed to male-typed moves within those same classes (κ_{1112}, κ_{2122}, κ_{3132}). The analogous nu term for fathers (ν_{klmn}) captures six base effects as well. As was the case with our dual reproduction parameterization, the gender-deviation effects for gendered class reproduction are constructed parsimoniously to isolate segregative deviations. The mother's gender-deviation term (λ_{ijmno}) captures two types of segregative effects: 1) the extent to which mothers disproportionately transfer their daughters from a male-typed to a female-typed subclass within their big class (i.e., an excess density of observations when $i = m$, $j = 2$, $n = 1$, and $o = 1$) and 2) the extent to which mothers disproportionately transfer their sons from a female-typed to male-typed subclass within their big class (i.e., an excess density of observations when $i = m$, $j = 1$, $n = 2$, and $o = 2$). The gender-deviation terms for fathers are directly analogous.

Presenting Parameter Estimates. We present the full set of five interactive terms for fathers in Table 3. In Fig. 6, we reproduce those same interactive terms, and we also show how they are superimposed on the base terms. The summary measures reported in Table 2 are estimated by imposing an equality constraint on the five interactive terms for mothers or fathers. The equality constraints for mothers are as follows:

$$\zeta_{222} = \lambda_{i1m11} = \lambda_{i2m22} = \lambda_{i2m11} = \lambda_{i1m22},$$

where $i = m$. The equality constraints for fathers are directly analogous. The results from Table 3, where the equality constraints are relaxed, show that all terms–save ν_{k2m11}–move in a roughly U-shaped pattern. The smoothed estimates in Table 3 are secured by reestimating our core model subject to the constraint that cross-decade changes in each of the five types of segregative effects assume a polynomial form. In Fig. 7, the counterfactual trends are estimated by recalculating D with the expected values secured by 1) substituting the 1980 and 1990 single-parameter estimates with the 1970 single-parameter estimate (thus representing the counterfactual that fathers did not become more integrative) and 2) substituting the 2000 and 2010 single-parameter estimates with the 1990 estimate (thus representing the counterfactual that fathers did not become more segregative).

Data Availability. Code for data analysis has been deposited in Open Science Framework (OSF) (https://osf.io/t92jz) (45). Anonymized GSS data are deposited in NORC (National Opinion Research Center) (https://gss.norc.org/) (46). Previously published data were used for this work (8).

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