A Preliminary Analysis of In-House Draws within the Overall Housing Draw at Stanford

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In this paper, I consider the problem of the in-house room draw at Stanford.[1] The in-house draw occurs after students have been assigned to residences by the general housing draw. First, I describe the standard mechanism used in the simplest situation, a dorm where all the rooms are doubles. Then, I consider the complications that arise when the dorm has different types of rooms available. I then discuss various problems with the in-house draw, including the importance of its interaction with the overall draw. I then raise

[1]See the appendix for definitions of relevant terms specific to Stanford.

the question of whether the university should have preferences of its own for the in-house draw. Finally, I outline some basic normative properties that we should seek in the in-house draw, discuss some possible ideas towards solutions, and conclude by emphasizing the importance of more research.

1 The Mechanism in a Dorm of Doubles

First, I describe the simplest in-house draw scenario, and the standard mechanism used. This is for a standard dormitory where all of the rooms are doubles. At Stanford, a significant number of dorms with upperclassmen fall into this basic category: dorms in the Wilbur, Stern, and FloMo complexes.[2]

Each house has a set number of rooms to be selected from; the other rooms are reserved either for incoming freshmen or for staff. These rooms are partitioned into male and female rooms by Housing beforehand; there are two distinct in-house draws, one for males and one for females. For the sake of exposition, I consider the male case.

Future residents come to the dorm's lounge on a weekday evening in May. Most of them are in drawgroups and have already figured out their roommate pairings; some might be the odd man left out of an odd-sized drawgroup; and some might have drawn alone. Typically, they are given a short tour of the residence by the future residence staff before the draw begins. The atmosphere tends to be casual, with residence staffs sometimes dressing up or performing skits. The process proceeds as follows:

1. Roommate pairs are finalized. Those residents needing a roommate meet and are matched, more or less *ad hoc*.

2. Each member of the roommate pair receives a ranking. This ranking is based usually on some assortment of the following criteria, typically on a scale of points:

    Seniority For example, 3 points for seniors-to-be, 2 for juniors, 1 for sophomores.

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[2]Some of these dorms actually have a couple of singles, slightly complicating the procedure. In Arroyo, for example, there was one single available, which was assigned first, and then this procedure was carried out.

House Legacy Sometimes, residents are given a bonus if they've lived in the house before. Sometimes this is just one single point, sometimes this is one point for each year previously lived in the house.

Theme/Focus Priority Some houses have academic, cultural, or ethnic themes, and residents have already received a "priority" in the overall housing draw to get into these houses. They are often also given priorities in in-house draws.

Sometimes, this is not done based on points, but rather on predetermined linear orderings, for example: seniors with priority > seniors without priority > juniors with priority > etc.

3. Each roommate pair is assigned the better of the two roommates' rankings. The pair then receives a lottery number.

4. In order of ranking, then lottery number, roommate pairs get to choose their room. Typically, there is a map of all of the rooms posted on a wall, and the roommate pair gets up, looks at the map for at most a minute, and chooses one of the remaining rooms.

This procedure is very simple from a social choice perspective: it's a matching problem with one-sided preferences, with serialized dictatorship based first on rankings (seniority, etc.) and then on lottery. It seems to work reasonably well.

2 The Hard Case: Heterogeneous Rooms

The standard mechanism described above relies on all rooms being identical, so that rooms are assigned to roommate pairs.[3] Many if not most dorms (e.g., Toyon, Manzanita, Lagunita, Roble, most row houses), however, have a mix of different types of rooms, including singles, doubles, and triples, so this mechanism does not work.

The standard approach to this situation seems to be the following, altered procedure:

1. Each individual receives a ranking, as before, and then a lottery number.

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[3]Note that this would work equally well if all the rooms were triples or quads.

2. In order first of ranking, then lottery, each individual goes up to the map of available rooms, and chooses a room. If the room isn't a single, he also (optionally but almost always) gives the names of his roommates, thus "pulling them up" to his ranking level. (Thus, it is the highest-ranked roommate who determines the room.)

As in the Wilbur case, individuals without roommates usually have an opportunity to meet beforehand and find their new roommates, and drawgroups subdivide themselves into roommate pairs. Since there is no guarantee, however, of what room configurations will be available, individuals also must either make contingency plans or hope for the best. This can lead to problems. Consider the following examples:

- In Toyon, there are several available singles, followed by less-desirable two-room triples. Suppose there's a drawgroup of six members, Amy, Beth, Catharine, Danielle, Edith, and Frances, that had been planning on having the following triples: {Amy, Beth, Catharine} and {Danielle, Edith, Frances}. Amy, however, receives first pick in the lottery, so she has the option of a single. She hadn't expected to get this single (indeed, coming into the draw, this group of current freshmen hadn't even realized that there were several singles available), but not surprisingly she chooses the single. As a result, when Beth draws a triple, she brings only Catharine in, and they are left with a random third roommate, not having had any opportunity to determine whether she was a good fit. One can easily imagine scenarios where there are even more contingencies.

- John and Steve have drawn into Castano, where there is a mix of singles, two-room doubles, and one-room doubles. Like most people, their preferences are single > two-room double > one-room double, and they want to room together. Bob and Igor are two seniors who have each drawn alone and each want either singles or two-room doubles. The lottery rankings are Bob > Igor > John > Steve, with others in between. When Bob gets to choose, there are no singles left, so he chooses a spot in two-room double A, but doesn't bring a roommate in since he doesn't know anyone. When Igor gets to choose, there are two two-room doubles left, A with one spot filled, and B with two spots open. Igor chooses a spot in B (perhaps because he prefers its 3rd floor view). Then, when John and Steve get to choose, there

are no completely empty two room doubles left, so they are forced either to split themselves up between rooms A and B, or to go for a one-room double, even though there are two spots left among all the two-room doubles. Furthermore, if all the remaining rooms are doubles and everyone else has a roommate pair, then some roommate pair is in the end going to get split up.

- In some row houses with heterogeneous rooming arrangements, rooms aren't predetermined by sexes (as they are in most dormitories). As a result, there have been cases where at the end of the draw, there ends up being two guys and a girl and one empty triple left, forcing the staff to reshuffle things. (I have heard of this happening twice last year; I'm sure there are more cases where this has happened.)

The first example shows that, when there are heterogeneous room arrangements, it's very hard to figure out roommate matches appropriately. The second example shows the problem in not treating rooms as units, but rather as collections of empty slots. In sum, this system can lead to a lot of problems, with no obvious way to improve it.

3   Drawgroup Manipulability[4]

One issue that arises is the potential for manipulation by a drawgroup. Even in the dorm of homogeneous room-types, drawgroups can manipulate the system. Suppose a drawgroup has two sophomores, Adam and Bob, and two juniors, Eric and Steve, and that Adam wants to live with Bob, and Eric wants to live with Steve. For the sake of the draw, however, Adam temporarily pretends to room with Eric and Bob with Steve. This way, both roommate pairs have a junior who will have a higher ranking than either members of the all-sophomore roommate pair would have. The two temporary roommate pairs choose two rooms, and then, after the draw is over, they switch back. (This can either be done in the confusion of when one informs the res staff running the draw, or simply in the fall when moving in.)

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[4]The sense of the term "manipulation" does not correspond perfectly to the technical use of the term in the social choice literature, since it refers to actions that can occur outside the formal mechanism; still, it corresponds to the normal English-language use of the term.

The potential for such manipulation is disturbing because it puts honest drawgroups at a disadvantage. There are three potential approaches to this. One is to police drawgroups to make sure they don't do this and not allow changes in the fall. This can be a challenge for a student res staff. A second potential solution is to simply ignore the problem, and hope it doesn't happen. A third solution, used in Eucalipto in 2005, is to give each drawgroup a lottery number (along with the ranking of its best member), and then have drawgroups go in order to select rooms. This is probably less feasible in a bigger dorm, decreases the autonomy of the individual (one of the features of the Stanford drawgroup system is that it allows an individual to split away from his drawgroup at any time in the process), and can lead to drawgroups having to divide rooms of differing desirability amongst themselves.

4   In-House Rankings

There are three criteria that are most often used for determining the rankings for the in-house draw: seniority, house legacy, and special priorities. Each of these has its potential drawbacks.

4.1   House Legacy

Some houses give a preference to residents who have lived there before. This raises two questions.

First, there is the issue of a "just" housing distribution. Freshmen are assigned in the preceding summer to their incoming dorms, which vary widely in desirability. Suppose Tom was assigned to Roble freshman year, and David was assigned to Serra in Stern. (Roble is generally considered a more desirable dorm.[5]) Then, before senior year, they both draw into Roble. Tom will beat David in the in-house rankings for a very desirable Roble single. Thus, his luck before freshman year comes and helps him again in senior year housing. From a Rawlsian perspective, it would seem that, if anything, the upperclass draw system should redistribute the inequities in freshman assignments rather than perpetuate them.[6]

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[5]My judgments about the desirability of dorms could be disputed (I've generally tried to follow the standard stereotypes), but so long as there are any differences in desirability of the dorms, these problems can exist.

[6]This only applies to four-class dorms that are also desirable for upperclassmen because

Second, there is the question of whether it's good for students to live in the same dorm multiple years. A system with house legacies for rankings is, *ceteris paribus*, going to encourage people to draw back into houses they've lived in before. This might or might not be a good thing. In the 1980s, Stanford used to give students the option of drawing back into their current dorm, establishing communities that extended from year-to-year within dorms (Todd Davies, personal communication). That system, however, is long-gone. It seems unlikely, given the complexity of the draw, that the inducement for residents to return to their dorm is enough to encourage enough residents to return to establish continuity within the house over years.[7] For a given individual, however, this inducement might be enough to encourage him to rank the house higher, thus discouraging students from trying a variety of housing. (See also §6 on university preferences.)

4.2   Priorities

The system of academic, ethnic, and cultural theme houses at Stanford has inspired a lot of debate. While staying agnostic on the issue of whether or not there should be such houses, I argue that, at the very least, there are difficulties in providing the right incentive schemes for these houses. A particular problem with the system is that many students get priority for houses because of the desirable living arrangements (e.g., in Manzanita because of the singles, or La Maison Française because it's on the row) rather than because of intrinsic interest in the house. (Conversely, theme houses without terribly desirable housing, such as Arroyo (where I am an RA), have a hard time attracting theme residents because better housing is available.) This problem mostly concerns the overall housing draw, rather than the in-house draw, but the problem is accentuated by dorms that give a bonus to priority residents in the in-house draw.

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they have singles, particularly Roble and Lagunita. The argument applies equally well, though, to people who have lucked out in the draw both preferred years. Suppose Jane drew very well both sophomore year and senior year, getting into 680 both times. Elizabeth drew poorly sophomore year, landing in Mirrielees, but then drew well senior year, and got into 680. If 680 practiced House Legacy (I'm not sure if they do), Jane would win in the in-house draw, thus benefiting twice from her good draw number sophomore year.

[7]The fact that people tend to draw preferred for sophomore and senior years also means that people would draw back with a year in between, so there wouldn't be any continuity from year-to-year, but rather only a bit of every-other-year continuity.

Giving priority residents a bonus in the in-house draw might also create resentment within the house among non-priority residents. (From personal experience working in a focus house where most residents had nothing to do with the focus, as is the case in almost all focus houses, there can be tensions for non-focus residents living in focus houses.)

4.3   Seniority

One of the basic normative properties of the Stanford housing system is that students who have been at Stanford longer should receive better housing. As discussed in §5, below, having two separate components, the overall housing draw and the in-house draw, give seniority preference might not necessarily always give seniors preference as well as a unified system.

In addition, having seniority as a preference in in-house draws can lead to some strategies that might go against students' preferences. This system provides an incentive for underclassmen to try to draw with or room with upperclassmen, so that they can be pulled into better rooms. Given that most people draw preferred sophomore and senior years, it also gives students an inducement to draw preferred junior and senior years, since then instead of being in the lowest in-house ranking during their first preferred year, they'll be above all of the sophomores who drew preferred in the in-house ranking. (To my knowledge, almost no one actually does this, largely because most people draw preferred sophomore year in an attempt for Toyon, because of plans to go abroad or staff junior year, or because the rest of their drawgroup plans to do one of these.)

Finally, there are different methods of determining seniority—some houses do it based on number of quarters enrolled at Stanford, some do it based on class year. Transfer students and students who have taken time off might unintentionally be put at a disadvantage.

4.4   Other Methods

At least two other methods have been used to determine in-house lottery ranking. Some dorms determine ranking based on overall draw number, which I discuss below in §9. Also, I have heard that one focus house, Ujaama, determines which residents receive singles based on essays. It would certainly be interesting (and no doubt problematic) if the university decided to give preferences based on some aspect of merit.

4.5 Honesty

The criteria for in-house rankings are almost always self-reported, since the draws are run locally by the incoming res staff, rather than centrally through the Housing Office, which would have the relevant information. It's possible that students misrepresent themselves in the in-house draw. Also, even if found out, it can be a challenge for the residence staff to confront residents who have done this.

5 Interaction with Overall System

What are students' preferences in the entire draw system? They care about at least the following: room type (single versus double, etc.); type of dorm (four-class, focus, row house, co-op, as well as specific reputations); proximity to friends[8]; roommate situation; size and location of room within dorm.

The current system is a 2-tiered social choice system: first there's the housing draw, where residents (with a drawgroup) list preferred dorms; then there's an in-house draw. Actually, there are more levels: (1) first a student has to choose a drawgroup, which can be stressful and dramatic; (2) then the drawgroup has to somehow decide amongst itself what its rankings should be; (3) then the overall housing mechanism assigns a house for the drawgroup; and (4) then the drawgroup has to figure out what roommate arrangements to try for in the in-house draw (this is often implicitly done in process (1)); (5) go through the in-house draw; and (6) determine within the room/suite who gets what part.[9] This system has two formal social choice mechanisms—the housing draw and the in-house draw—and up to four informal social choice mechanisms (i.e., group negotiations).

Such a compositional system has both advantages and disadvantages.[10]

First, this compositional system cannot capture all of the preferences nor

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[8]And distance from enemies—which can legitimately be a concern with regards to exes.

[9]For example, in a Mirrielees three-person suite, there is one single and one double. Who gets what is decided entirely *ad hoc*; sometimes, it is simply a matter of who moves into the room first, sometimes it's a flip of the coin, or even one of the roommates being more of a jerk and forcing the other two into having the double. This clashes with the basic normative criterion of fairness.

[10]I'm not sure if the notion of compositionality has been studied often in the literature. At the very least, cases where both formal and informal social choice mechanisms interact should be of interest to scholars.

accurately reflect the normative preferences Stanford has for, e.g., giving preference to seniors. Most obviously, for many students, what matters most is the type of room they get, not what dorm they live in. But they cannot list a preference for singles over two-room doubles over one-room doubles. Instead, they are forced to make probabilistic guesses in ranking houses. A student might guess that there's a 60 percent chance of a single in Lantana versus a 40 percent chance of a single in Adelfa but, given a single, prefer Adelfa. They are then forced to make guesses based on very imperfect information of probabilities that can fluctuate wildly.[11] For example, in dorms with only 16 or so upperclassmen male slots like in West Lagunita, two eight-person drawgroups of seniors can end up drawing into Eucalipto, with half of these seniors stuck in doubles, and two eight-person drawgroups of sophomores can end up drawing into Adelfa, with half of these lucky sophomores in singles; this also shows how the composition does not interface well with the normative desire to give seniors better housing.

For some students, knowing exactly what their roommate configurations will be is a priority; in this case, the two-tiered system that can potentially split roommate configurations in in-house draws is a problem. (Should these students be forced to forgo the possibility of living in potentially desirable housing like Toyon out of fear that it's going to mess up roommate configurations?) In addition, as pointed out by Pauly and Snyder, drawgroups are a very coarse way of representing a desire for proximity of friends.

On the other hand, it's much more computationally feasible to have this multi-tiered system than a system in which people list their complete preferences for everything.

There is a second serious problem with this multi-tiered system: stress.[12] The draw is notorious for the "drawma" it provokes. First, each of the levels of informal social choice requires careful handling of interpersonal dynamics. Freshman year, students are essentially forced to decide who their real friends

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[11] A very serious problem in the past was that dorm's in-house draw procedures were not publicly available until after students had listed their preferences in the overall housing draw; students thus also had to guess whether or not they would be benefited by, say, seniority or house legacy. According to Edith Wu-Nguyen, from the Wilbur Housing Office, however, Res Ed this year will have houses list these procedures online beforehand. [**Update**: It turns out, this did not end up happening this year, so it remains a serious problem. RHK 5.31.07]

[12] It would be interesting to see how many of the mental health issues faced by Counseling and Psychological Services are related to draw-related stress.

are in determining drawgroups. It's also not clear to what extent people are morally allowed to be self-interested, and to what extent they are obligated to be loyal to their drawgroup.[13] Then, the moment of waiting to find out what one's draw number is, ranking one's choices, and finally finding out where one ended up is very nerve-wracking. Then there is another week before one finds out whether or not they ended up in a single. This whole process stretches over the course of an entire month during the spring. It is particularly stressing because, at Stanford, the social life revolves around one's dorm to an incredible extent.[14]

The effect of composed mechanisms is an interesting general question for social choice theory, in particular the interplay between formal and informal mechanisms (the draw and the negotiations), as well as the ethics and psychology of this. It is also an interesting general question for social choice theory what the formal properties of such composed systems are. Essentially, they can be seen as domain restrictions at repeated levels. Does this avoid some impossibility results? It certainly makes it more computationally feasible. But perhaps if the domain restrictions get rid of crucial information, each level of composition compounds it.

6   The University's Preferences

One notion that has been taken for granted is that the house and room-matching problem is essentially *one-sided*, except for giving preferences for priority residents of theme houses. That is, the mechanism is set up so that the sole goal (except for a few housing priorities) is to produce a fair assignment based only on students' preferences. This, I think, is incredibly misguided.

Stanford's purpose is to provide students with an educational and formative four years. Stanford very appropriately realizes that much learning occurs outside the classroom. In particular, it realizes the important role

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[13]I think this cannot be emphasized enough. Freshman year, I along with my roommate "split away" from my drawgroup. It was an agonizing decision. I knew it was right for me—I wanted to branch out and meet new people—but I had no notion of what an appropriate or acceptable action would be. Was it fair to my drawmates? These are morally trying questions for a freshman adjusting to college to have to figure out.

[14]From informal discussions with friends at other colleges, I get the impression that this is much more so the case at Stanford than at its peer institutions.

that residences play in student life, dedicating tremendous resources to its Residential Education program.

The problem is that student's own preferences may come into conflict with what is best for them and the school. For example, Stanford emphasizes the crucial role that diversity plays in students' experiences at Stanford. Freshman year, there are many opportunities for this to occur; in my freshman dorm Junipero, I met students from all walks of life and regularly interacted with them. Drawgroups, however, tend not to reflect the diversity of Stanford. They tend to be much more homogeneous not only in terms of racial and religious makeup, but also in terms of majors and extracurricular activities.[15] This is not surprising; people tend to associate with those they are comfortable and familiar with. Then, with the overall housing draw, similar-minded drawgroups tend to draw in similar places. Any student can tell you that Kimball is an "Asian" dorm, or that Mirrielees is full of athletes, or Synergy full of hippies.

There are two approaches to take. One is to emphasize students' choices—if people want to draw with each other and live in certain dorms, let them be. A second approach is to decrease the choice of individual students and individual drawgroups, for the sake of a more educational, diverse experience for everyone. In particular, if drawgroups were limited in size to roommate pairs, then students would end up being forced to meet and interact with more new, different people than if they ended up in an upperclass dorm along with seven of their good friends and thus never had to branch out and meet new people. In my personal experience, I've seen drawgroups of somewhat similar friends from freshman year morph into utterly homogeneous groups after living together sophomore year, because they are only interacting with people similar to them.

Stanford already acknowledges the importance of this diversity in one regard: ensuring equal gender distribution in housing.[16] This is, presumably, because it's a better experience to live in a dorm that's equally mixed by gender, and if this weren't guaranteed, some dorms become disproportionately of one gender.[17]

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[15]I'm making a rather strong claim based on my observations of Stanford. Empirical research of course needs to be done to test out these claims.

[16]There is also, of course, the issue of gender-neutral housing, which I won't go into but which I imagine would complicate things further.

[17]Draw number statistics show that certain dorms draw much better for guys than for girls and vice versa. For example, co-ops are much easier for guys to get into. If there

Of course, it would be a political challenge for a university to take choice away from students. But the university should acknowledge its *in loco parentis* role and seriously consider this.[18]

Although I've been arguing merely that, in general, Stanford should acknowledge that it has its own preferences in the overall housing assignment, there are cases where there should be two-sided preferences within the in-house draw as well. Twain House has a policy of forcing drawgroups to split up amongst the different halls of the dorm. This forces residents to interact outside of their drawgroup and get to know people in different halls. Without this system, in a dorm where all the rooms are the same, people will often choose to live right next to their drawmates and not get to know other people in their dorm.[19] This has worked well in Twain, and I could imagine that it would be very useful in certain dorms (e.g., Toyon) with a reputation for being cliquey among drawgroups. As an RA in Arroyo, I attempted to introduce this system in our in-house draw, with mixed levels of success.

It's conceivable that there could be other cases where a dorm should have its own preferences in an in-house draw. For example, in a dorm with homogeneous types of rooms, if rankings are done based on seniority, and people tend to like to live on the first floor, the result is likely to be that the first floor of a dorm will be largely seniors, the upper floors largely underclassmen. If the interaction between different classes is useful (I found it useful when I lived in a mixed-class dorm), there is a legitimate reason to deny people all of this choice. An entirely similar argument could be made if people want to interact largely with people in the *same* class, which Stanford does to some extent in having Toyon as a sophomore dorm.[20]

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weren't predetermined gender quotas, it's conceivable that certain co-ops would be almost all girls, even though everyone would rather they be evenly mixed.

[18]Harvard did such a thing when it made its housing draw completely random in 1996, rather than allowing drawgroups to list preferences for houses, because houses had become undiverse. (See http://www.thecrimson.com/article.aspx?ref=90147 among other articles available on *The Crimson*'s website for a discussion of this.) Though controversial at the time, now the randomized housing system seems entrenched, so it would not be completely politically infeasible for Stanford to decrease student choice in the name of diversity.

[19]This is less of a problem in some dorms, such as Manzanita or Lagunita, where there are a range of different types of rooms mixed throughout the dorms, so a drawgroup of, say, two roommate pairs, would choose to live further away from each other in order to get two-room doubles instead of one-room doubles. To a lesser extent, though, drawgroups will still self-segregate.

[20]Stanford could definitely have a motive for this: one RF has pointed out to me that

It's not always feasible to implement direct policies to effect the dorm or university's preferences. Even in terms of splitting up drawgroups, it tends to elicit very negative responses from residents and requires a determined residence staff to push through. There are cases where there cannot even be a legitimate justification for having such a policy. For example, a boyfriend and a girlfriend might both end up in the same dorm. In the in-house draw, they might unsurprisingly choose to live next to each other. This probably isn't best—even if they stay together, they would benefit from having somewhat independent lives at least in terms of living on different floors, and if they broke up (as college relationships are wont to do), it would be rather awkward if they were living next to each other.

So what's the solution? Paradoxically, taking choice out of students' hands and leaving it to chance might actually lead to things being better off! While these suggestions are rather controversial, at the very least the notion that giving students complete choice might not be best for them should be considered.[21]

7 What Basic Principles Should the System Have?

I have presented some of the basic issues facing the in-house draw. Following Pauly and Snyder, I suggest some basic normative principles that the in-house draw mechanism, in conjunction with the overall mechanism, should have.

Fairness and Consistency In particular, residence staffs shouldn't favor certain residents or change the system in the middle.

Non-Manipulability This refers both to manipulability in the technical social choice theory sense, and in the sense of not being manipulated by doing things external to the formal system, such as misrepresenting one's ranking

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Stanford's plan to make all freshmen live in all-frosh housing, and its creation of a freshman dean's office that encourages class spirit, might be motivated by a desire to increase alumni giving by increasing class spirit at the expense of interclass connections.

[21]Thoughts in this section were largely inspired by an article from the April 2002 *Atlantic Monthly* by Jonathan Rauch about the work of Nobel Prize-winning economist Thomas Schelling on self-segregation in housing ("Seeing Around Corners").

Transparency As mentioned above (see note 11), it's crucial that people have the relevant information about what procedures will be used.

Full Information Students should have accurate information in choosing their rooms—e.g., an accurate understanding of the rooms' sizes (RAs are often given maps that are not at all drawn to scale). Also, it is useful to see what rooms are being picked, so that drawgroups may update their plans of what they will take; one useful technique is to display everything on an overhead projector (Joel Englander, personal communication).[22]

Non-Financial The university has made a point of treating all students equally for housing; it doesn't want richer students having better housing. Thus, it's important to avoid any sort of market system for rooms.

Timeliness Some in-house draws drag on for hours.

Setting the Tone The in-house draw is the first event for a new dorm, so it's an opportunity to establish a community.

Ease for Res Staff Running the in-house draw can be a hassle for residence staffs.

Following Desired Rankings If the university wants to give certain people (e.g., seniors) better housing, the system should do so consistently.

Reactiveness to Full Individual Preferences The mechanism should, as much as possible, be able to respond to actual preferences of residents—e.g., the desire for a single being more important than getting any specific house.

Computational Feasibility If in-house draws are done by hand, they must be computationally feasible by hand, so complicated algorithms for optimal matchings wouldn't work, at least in the current setup of in-house draws (though perhaps if things are centralized these could be considered).

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[22]From the *in loco parentis* perspective, perhaps this is too much information, since a relatively random assortment of rooms will be better.

Minimal Elicitation On the other hand, the mechanism should not burden students with providing too much information about their preferences, both in terms of writing it down and in terms of having to do the research.

Stress-Free The draw is a huge stress on students; a mechanism that avoids this as much as possible is desirable.[23]

Good Roommate Pairs It's never good when roommates don't get along. Ideally, the system should make some attempt to match "random" roommates well.

(Possibly) University's *In Loco Parentis* Preferences As I argued above, it might be better for the university to sacrifice students' choice in favor of encouraging things like diversity, or for dorms to force drawgroups to split up.

8 Centralized Guidance

There is little to no guidance offered to residence staffs in deciding how in-house draws should work. There is no official Res Ed policy; staffs are just issued guidelines that the process by fair, consistent, and transparent. As a result, staffs are often left to plan these in-house draws with little guidance about what works best. There is little consistency between dorms, and because there are few guidelines, staffs often unintentionally fail to consider certain contingencies, and so are forced to adjust their policies *ad hoc* during the draw, leading to inconsistencies. Further, because the in-house draws are led by the brand-new RAs, peers whose role is largely to be friendly and supportive, there might be more of a tendency to apply the procedures inconsistently, out of an RA's attempt to be nice to his future residents. One possible improvement would be to have clear, centralized guidelines and procedures for in-house draws, rather than relying on RAs to independently

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[23]Could draw even be fun? At Harvard, where today freshmen find out which of the twelve houses they have been randomly assigned to, students perform ritual dances and houses welcome them with events demonstrating their house spirit, according to *The Harvard Crimson* (http://www.thecrimson.com/Article.aspx?ref=517909). If something can be made fun at Harvard, surely it could be made fun at Stanford.

figure out what is best. Perhaps even having an adult staff member run everything would be the best way to ensure fairness (and this way the random staff member, rather than the RAs, would get any natural resentment for a bad lottery number).[24]

9 Alternatives and Ideas

Given the problems with Stanford's in-house draw, one might wonder what other options there.[25]

One option would be to abandon Stanford's system of an overall housing draw, followed by an in-house draw. Instead, there could be one centralized draw, a lottery system where students chose both their dorms and their rooms at once, as part of a drawgroup. Princeton has such a system; everyone joins a drawgroup that is assigned a draw time, based on lottery, and at that given time, the group chooses rooms based on all the rooms that are available.

One problem with this system is that Stanford's options of dorms are so diverse, with different dining arrangements tied to the specific dorms (unlike Princeton, where the upperclassmen in the draw tend to independently eat in non-university-owned eating clubs[26]). Another option would be for Stanford to make dorm "clusters" of 400-800 people, somewhat analogous to residential colleges, where people would be assigned; then, within the cluster, a simple lottery determines room arrangements.[27] In such a situation, doing a cluster-wide room draw, with roommate pairs, is more feasible; Yale's residential draw within its residential colleges follows such a pattern.

Of course, these ideas might not work at Stanford, which places much more of an emphasis on individual dorms rather than a residential college

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[24]On the other hand, having a more bureaucratic system like this would decrease the power of the in-house draw as a community-building event.

[25]Alas, the in-house draws of co-ops like Chi Theta Chi, where everything is done by consensus and students live in rooms of up to eleven residents, probably would not generalize well.

[26]There is a separate draw for sophomores-to-be, who live in residential colleges, at Princeton.

[27]After this paper was written, I found out that a Stanford Taskforce Evaluating Education in the Residences (STEER) has proposed adopting a residential model of "neighborhoods" similar to my cluster proposal. This is a very intriguing and potentially positive development! Obviously, more research along the lines of that done in this paper should be done to consider housing draws in such a setup. Many aspects of this paper carry over, of course.

system, and where, for row houses, students eat just within the house, and so would probably be unwilling to be split even between two nearby row houses with drawgroups. (As Vice Provost for Undergraduate Education John Bravman told the faculty senate, "Unlike Harvard or Yale with their college system, we have a house [i.e., dorm] system. We will never have a college system. We're not going to tear down all the dorms and build again."[28]) Still, it might be worthwhile to consider to what extent such a system would be possible, and to consider out of the box ideas as a way of rethinking Stanford's residential system.[29] Another possibility would be to have a campus-wide draw for singles, then for two-room doubles, first, and then have a Stanford-wide housing draw for the remaining one-room doubles, with direct preference going to seniors.

Another possible partial solution is to give up on within-house rankings. Instead, rank everyone based on overall housing draw number. Ensure that the overall housing draw gives preferences to the right people (e.g., seniors get more preferences), and then this automatically carries over to the in-house draw, eliminating the manipulability by drawgroups problem.[30] This does not, of course, solve anywhere close to all the problems, but it's an idea.

At the very least, careful attention needs to be paid to the potential problems faced. Some of these issues are dorm- and room-type-specific. For example, triples pose different problems than doubles, which pose different problems than two-room doubles; a dorm of quads and doubles will most likely split up roommate pairs less often than a dorm of triples and doubles.[31] There are also Stanford-specific issues such as the presence of a large sophomore dorm (Toyon), or the tendency of people to serve on staff or go abroad junior year.

Why should the university care? Students' lives at Stanford revolve to a tremendous degree around the social lives in their houses. Thus, students

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[28]http://news-service.stanford.edu/news/2005/april6/minutes-040605.html. But then again, indications from this new STEER proposal seem to indicate something at least along these lines might be happening!

[29]This is somewhat straying from the topic of the paper, but, for example: encouraging interaction between dorms by allowing Stanford students to have access to any other student dorm or allowing students to easily eat at other dining halls or row houses.

[30]This might have to be done in a way that doesn't encourage underclassmen to draw with upperclassmen to get a better number.

[31]This also raises the question of how the university should build any new dorms—it's important not only to consider what types of rooms will make for a positive dorm experience, but also whether there will be a feasible room assignment mechanism.

care a lot about the system, and so it's important to them that the housing draw be done well, and in a stress-free manner. Furthermore, I argue, the university has, in its *in loco parentis* role, the power to shape students' undergraduate experiences by shaping the nature of residences. The university should put serious thought into this. This will both benefit students educationally and encourage good memories of the undergraduate experience that will turn into more alumni giving.

10   General Questions for Research[32]

In addition to raising specific questions about the Stanford in-house draw, this paper suggests some interesting general questions for research in social choice theory:

Social Choice Theory Guiding Policy This is a case study in how social choice theory really can relate to normative principles in guiding real-world policy. It would also be interesting to see how often there are basic, fixable flaws (e.g., not posting in-house draw procedures before the overall housing draw, not allowing students to rank more than eight choices in the overall draw [as pointed out by Pauly and Snyder]) in social choice mechanisms that an analysis such as this would catch. (Indeed, how are these social choice mechanisms generally created? Are there applied social choice theorists who create them, or are they put together over-time by bureaucrats running the institutions using them? In particular, how often are there systems that were originally designed well but have incrementally had so many changes added to them that their once-desirable formal properties no longer obtain?)

Ethics of Social Choice Theory In coming up with this policy, what ethical principles should be followed?

Compositionality of Social Choice Mechanisms It would be interesting to see what formal properties composed mechanisms have, particularly with regards to domain restriction. Also, the relationship between formal social choice mechanisms and the informal social choice mechanisms (group negotiations) that pertain to it should be examined.

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[32]This section would be omitted in any version of this paper not also directed at scholars in social choice theory.

Stress as an Externality Stress is perhaps the biggest problem of the housing draw; surely there could be other mechanisms that reduce the stress. (On a related psychological note, are people more or less likely to complain about the result of a social choice mechanism when it is random, and does that suggest perhaps giving people more or less choice would be better?)

Moral Psychology of Social Choice Theory When interacting with other people in conjunction with a social choice mechanism, how is this morally taxing?

11   Conclusion

I have presented a preliminary analysis of some of the aspects of the in-house draw at Stanford. What this shows is that careful thought needs to be placed on how this mechanism interacts with the overall mechanism. I have the following recommendations:

- The crucial role that one's house assignment plays in one's Stanford experience cannot be over-emphasized. Careful thought needs to be spent both on whether this is best, and on how to best have this system work. In particular, it would make sense to take advantage of Stanford's resources in psychologists, sociologists, education specialists, economists, and philosophers to determine what system of housing and of housing assignments makes sense.

- Along those lines, careful research should be done to test some of the empirical conjectures I have raised, for example about the diversity of drawgroups, the degree of stress the draw places on students, and the extent to which students' social lives depends on the dorm. In particular, these results should be compared to those of Stanford's peer institutions.

- Stanford should carefully consider how much freedom it gives students in the draw. A strong argument can be made on the grounds of encouraging diversity (both in the demographic sense, but also in a very broad sense of meeting different people than one set of friends) that students shouldn't be given complete choice over their living arrangements.

- Stanford should be aware of the tremendous degree of stress that the housing assignment system places on students, particularly with its multiple levels of formal and informal social choice procedures, and consider alternative draw systems that could alleviate this stress.

- Any consideration of the overall housing draw needs to pay attention to the crucial role of in-house draws.

- Even if the general status quo is maintained, there should be some centralized set of guidelines for performing in-house draws to avoid basic problems.

Appendix: Definitions

I present some basic definitions that I use often, for those not familiar with the Stanford draw system.

(Overall) Housing Draw Each spring, freshmen, sophomores, and juniors participate in a housing draw to be assigned a dormitory to live in the following year.

Draw Group Students may form drawgroups of up to 8 students, who are treated as a unit by the overall housing draw mechanism.

Preferred Year Students have two preferred years and one unpreferred year in the housing draw. Students using a preferred year are given strict preference (modulo technicalities of priority) in the overall housing draw.

Priority Some houses, due to a special focus (ethnic, cultural, or academic), give priority to some residents in the overall housing draw.

Ranking I use this term to refer to the ranking that students receive in the in-house draw. Confusingly, this is often called in-house priority.

In-House (Room) Draw The draw for rooms within an assigned residence.

Housing/Housing Staff Housing Staff refers to the central Stanford Housing and Residential Education (Res Ed) offices.

Staff/Res Staff/Dorm Staff Each dorm has a student staff, composed of RAs (residential assistants) and other student positions, and led by the resident fellow (RF), a faculty or other adult staff member of the university. The incoming res staff is selected by early May, shortly before the in-house draw. Row houses do not have RFs.