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Sizing Up Categories

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Categories intentionally create discontinuities. By breaking the world up into cognizable chunks, they simplify the information environment. But the signals they provide may be inaccurate or scrambled by strategic behavior. This Article considers how law might approach the problem of optimal categorization, given the role of categories in managing and transmitting information. It proceeds from the observation that high categorization costs can be addressed through two opposite strategies—making classifications more fine-grained (splitting), and making classifications more encompassing (lumping). Although continuizing and other forms of splitting offer intuitive answers to inaccurate classification and gaming along category lines, lumping is sometimes a better solution. If category membership carries multiple and offsetting implications, the incentive to manipulate the classification system is dampened. To take a simple example, insurance that covers only one risk is more vulnerable to adverse selection than is an insurance arrangement that covers two inversely correlated risks. Making categories larger, more durable, and more heterogeneous can produce such offsets. These and other forms of bundling can arrest damaging instabilities in categorization.

Introduction

Questions and controversies surrounding categorization are ubiquitous in law and policy. Is the red wolf a separate species?[1] Does agreement procured by deception count as consent, the lack of consent, or something in between?[2] How many genders are there?[3] Is "almond milk" a misnomer?[4] And so on. Categorization carries consequences—not just for the person or thing categorized, but also for those who share the category into which an entry is placed, and for those who do not. These high stakes predictably generate conflict and gaming. Beyond inaccuracies in classification and associated inequities, strategic behavior around categorization can unravel markets and other valuable social arrangements. The potential vulnerability of insurance markets to adverse selection is a familiar example.[5]

This Article considers how law might approach the problem of optimal categorization.[6] Categories intentionally interpose discontinuities between what is inside and what is outside. They break the world into cognizable chunks to accommodate human limitations—the inability to separately apprehend, evaluate, and optimally address each individual instance or phenomenon. By serving as shortcuts, categories respond to the prohibitively high transaction costs that would be associated with perfect individuation and infinitely fine calibration of responses and prices.[7] Categories thus simplify the information

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1   *Compare* Carl Zimmer, *DNA Study Reveals the One and Only Wolf Species Living in the Wild*, N.Y. Times, July 27, 2016, https://www.nytimes.com/2016/07/28/science/red-eastern-gray-wolves.html; *with* National Academies Press, *Evaluating the Taxonomic Status of the Mexican Gray Wolf and the Red Wolf* 51-72 (2019), available at https://www.nap.edu/download/25351#. I thank Michael Livermore for this example.

2   *See, e.g.*, Leo Katz, Why the Law Is So Perverse 166-68 (2011); Roseanna Sommers, *Commonsense Consent*, 129 Yale L.J. 2232 (2020).

3   *See, e.g.*, Jessica A. Clarke, *They, Them, and Theirs*, 132 Harv. L. Rev. 894 (2019).

4   *See* Painter v. Blue Diamond Growers, 757 F. App'x. 517, 519 (9th Cir. 2018) (affirming dismissal of claims that the term "almond milk" constituted deceptive marketing).

5   I discuss this example below. *See infra* Part III.

6   I thank Ronen Avraham for suggesting this framing and phrasing.

7   *Cf.* Henry E. Smith, *On the Economy of Concepts in Property*, 160 U. Pa. L. Rev. 2097, 2101-04 (2012) (noting the importance of "mental shortcuts" in addressing transaction costs).

environment for both classifiers and consumers of the classification system.[8] But the informational signals they provide may be faulty, and this, too, is costly.

One problem relates to classification difficulties, which become intense around category boundaries—especially when categories cut through continua. Another concern is instability in the categories themselves, often produced by strategic behavior in seeking inclusion or exclusion (again, think of adverse selection in insurance markets). Shifting coalitions around categorization decisions can also produce problematic cascades.[9] In addition to these behavioral effects, miscategorization can produce inequities or result in inappropriate treatments, whether by causing like things to be treated differently or different things to be treated alike.

High categorization costs can be addressed through two opposite strategies—making classifications more fine-grained (splitting), and making classifications more encompassing (lumping). Efforts to turn categories into continua are an extreme example of the former strategy, and one-size-fits-all approaches are an extreme example of the latter strategy—with chunky on/off binaries following close behind. Continuizing and other forms of subdividing are often proposed as a fix for category problems.[10] But greater granularity is not always a feasible or normatively appropriate alternative. Creating larger and more durable categories is sometimes a cheaper and better solution.

Insights from mechanism design show why this might be so.[11] What creates trouble for categorization often comes down to skewed incentives—to manipulate categories or the relevant inclusions or exclusions to gain or preserve an advantage from the classification system, or to reap or avoid spillover effects from others who are co-classified or differently classified. When categorization carries multiple and offsetting implications, these incentives and their potential to spur costly behaviors are muted. To take a simple example, insurance that covers only one risk is more vulnerable to adverse selection than is an insurance arrangement that covers two inversely correlated

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8   *See, e.g.*, Eleanor Rosch, *Principles of Categorization*, in Cognition and Categorization 27, 28-29 (Eleanor Rosch & Barbara B. Lloyd eds., 1978) (describing how categories economize on information).

9   *See infra* Part II.C.

10 *See, e.g.*, Adam J. Kolber, *Smoothing Vague Laws*, in Vagueness and Law: Philosophical and Legal Perspectives 275 (Geert Keil & Ralf Poscher eds., 2016); Edward Fox & Jacob Goldin, *Sharp Lines and Sliding Scales in Tax Law*, 73 Tax L. Rev. 237 (2020).

11 Mechanism design aims to create incentive-compatible structures that induce agents to reveal private information honestly and otherwise act in ways that further social coordination. For an overview, see Roger B. Myerson, *Perspectives on Mechanism Design in Economic Theory*, 98 Am. Econ. Rev. 586 (2008).

risks. Making categories larger, more durable, and more heterogeneous can help to produce such offsets. Although lumping is not always appropriate, it nonetheless represents an underappreciated alternative to continuizing.

In examining these possibilities, this Article emphasizes a key facet of categorization: the informational signal that it conveys about category members, which both influences and is influenced by classification choices. I focus on these information dynamics because they vividly present both the opportunity and the incentive for strategic behavior around categorization, which can result in both inaccuracy and instability. Of course, information is only part of the story: categories are built to do a wide variety of things, and many factors influence the category-related choices that people make. Nonetheless, an information lens illuminates some of the signature problems that categorization presents, and provides insight into alternatives for addressing them.

This Article proceeds in four parts. Part I explores the idea that categories provide informational signals, and examines some problems with those signals. Part II considers how these costs of categorization might be addressed and suggests that offsetting implications can provide traction on them. Part III uses the example of insurance to illustrate how category-enlarging or lumping moves might provide alternatives to finer specification in countering strategic behavior. Part IV extends the analysis to questions of category breadth, where a bundling or offsetting approach can address strategic behavior around category construction.

Throughout, my aim is analytic: to examine how categories construct and use information, and how changing their structure (whether through greater refinement or increased scope and durability) can dampen strategizing and increase stability and accuracy. I do not seek to resolve the many normative questions that crop up in particular categorization contexts,[12] but rather to provide a framework for understanding and addressing some of the core structural challenges that categorization itself presents.

I. Categories and Information

To place an item or an entity (a person, object, event, animal, or anything else) into a category is to do two things at once: to emphasize a commonality with the existing members of that category, and to draw a distinction between the categorized individual or item and everyone or everything that falls outside the

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12 For example, categorization issues surrounding personal characteristics and identity implicate tremendously important and contested normative considerations that lie beyond the scope of this Article.

category.[13] Categories thus convey information about their members, which various audiences then use and act upon.[14] But how is that informational signal constructed, managed, and transmitted? The sections below examine four dimensions relevant to the informational content of categories: how sharply the categories are defined, whether they suppress or accentuate intra-category differences, how adding or subtracting members dilutes or enhances the informational signal, and whether the category itself has any stable evaluative meaning or instead carries a meaning that is entirely a function of its membership. Together, these attributes shed light on some of the most important ways in which categories manage and convey information.

A. Edges and Hedges

Categories are significant in part because they interpose discontinuities between what is within and what is without. But as research on categories suggests, these boundaries may be fuzzy rather than sharp, with some entries being more full-fledged category members than others.[15] George Lakoff identifies "hedges" such as "technically" or "in a manner of speaking" that treat category membership as a matter of degree rather than an on/off binary.[16] Eleanor Rosch's related work uses the idea of prototypes to explain why a sentence like "a penguin is technically a bird" makes sense, but "a robin is technically a bird" does not.[17] Just as some members fit the category more or less well, so too may entries fall outside the category to greater or lesser

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13   *See, e.g.*, Rosch, *supra* note 8, at 28 ("To categorize a stimulus means to consider it, for purposes of that categorization, not only equivalent to other stimuli in the same category but also different from stimuli not in that category."); Eviatar Zerubavel, *Lumping and Splitting: Notes on Social Classification*, 11 Soc. F. 421, 422 (1996) (observing that categorization involves both "lumping at the *intra*categorical and splitting at the *inter*categorical level").

14   *See* Geoffrey Bowker & Susan Leigh Star, Sorting Things Out: Classification and its Consequences 5 (1999) (describing "systems of classification as part of the built information environment").

15   *See, e.g.*, Eleanor H. Rosch, *On the Internal Structure of Perceptual and Semantic Categories*, *in* Cognitive Development and the Acquisition of Language 111, 112 (Timothy E. Moore, ed., 1973).

16   George Lakoff, *Hedges: A Study in Meaning Criteria and the Logic of Fuzzy Concepts*, 2 J. Phil. Logic 458-508 (1973).

17   Rosch, *supra* note 8, at 39.

degrees. A bat is definitely not a bird, but many people would deem it to be closer to the bird category than is a cow.[18]

When category membership requires a judgment call about where to draw a line through a continuous variable, we run into a special form of fuzziness exemplified by the sorites paradox: it is impossible to say just when an aggregation of sand starts or stops being a heap.[19] It is similarly hard to say precisely when a person who is losing hair becomes bald. These problems arise because the category denotes an indeterminate aggregation (of sand or hair, say) and the units in the aggregation are so numerous and fine-grained that fixing any precise cutoff point is not only arbitrary, but also unhelpful given the costs of counting. We instead have to look at each aggregation as it stands and ask whether it matches up to our idea of the category in question. A similar point can be made about imprecisely defined categories like "tall" that require drawing a line in a continuum.[20]

This fuzziness renders categorization schemes vulnerable to instability. Any sharp cutoff will be arbitrary, and because nearly alike phenomena may be treated quite differently, even small errors in measurement or judgment can have large consequences. But anything less sharp may produce gaming around the category line for those who have an interest in moving it a small degree in one direction or another. These incentives exist because of the informational signal that category membership conveys, which can carry a variety of consequences, either immediately or eventually. The sections that follow delve into the nature of these signals to examine how these incentives work.

B. Blenders and Blinders

Although systems of categorization underscore differences *between* categories, at least some degree of heterogeneity *within* categories is implicit in the very concept of using categories. Indeed, intra-category variation lies at the

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18   *See* Lakoff, *supra* note 16, at 459. Notably, perception and usage around animal categories may diverge from those derived from biological taxonomies. For a recent legal example, see Makah Indian Tribe v. Quileute Indian Tribe, 873 F.3d 1157, 1167 (9th Cir. 2017) (affirming the district court's finding that the "right of taking fish" in the Treaty of Olympia was intended to include seals and whales).

19   *See, e.g.*, *Sorites Paradox*, Stanford Encyclopedia of Philosophy, https://plato. stanford.edu/entries/sorites-paradox/.

20   *See, e.g.*, Lakoff, *supra* note 16, at 461-63; Adam J. Kolber, *Line Drawing in the Dark*, 22 Theoretical Inquiries L. 111 (2021).

heart of age-old debates between lumpers and splitters.[21] But categorization schemes vary in how they manage information about this type of variation. Once members are placed in a category, do intra-category differences become less visible to relevant audiences, or do they actually become more salient because of the narrower comparison group?[22]

Consider two polar possibilities. In the first, categories operate like blenders, mixing together all of the items in a given category and delivering some average informational signal to the outside world about the category's contents. In such cases, the category is information suppressing, flattening the preexisting heterogeneity among category members. For example, sorting student exam performances into grade buckets tends to suppress information about the intra-grade differences among students; a consumer of academic transcripts would have no choice but to treat all B grades for a given course as fungible with each other. Categories like this homogenize (within) as well as dichotomize (between inside and outside). Every individual member is treated like an average member of the category.

An opposite possibility is that categories operate like blinders, focusing attention on the differences among a given category's members and limiting or even blocking out-of-category comparisons. Placing an athlete into an age or weight bracket for a sports competition, or creating a category like "lawyers under 35," enables people who might not be standouts in a larger pool to gain prominence within their particularly defined category. Here, the category is information preserving. It segments the world while retaining information about individual members in ways that permit further ranking and competition.

These two polar possibilities generate opposite incentives. In an information-preserving categorization scheme, it is advantageous to be the best in one's

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21 The "lumpers and splitters" phraseology was used by Charles Darwin, as well as earlier writers. *See* Glenn Branch, *Whence Lumpers and Splitters?*, Nat'l Cent. Sci. Educ., Dec. 2, 2014, https://ncse.ngo/whence-lumpers-and-splitters.

22 For a (dated) example of the latter, *see* Amos Tversky & Itamar Gati, *Studies of Similarity*, *in* Cognition and Categorization 79, 90 (Eleanor Rosch & Barbara B. Lloyd, eds., 1978) ("[T]he two Germanys [East and West] are likely to be viewed as more similar to each other in a context that includes many Asian and African countries than in a context that includes only European nations."). *See also* Adi Leibovitch, *Relative Judgments,* 45 J. Legal Stud. 281 (2016) (finding that the gravity of crimes within a judge's overall caseload can affect the sentencing decision for a given case, with implications for specialized courts (e.g., for juvenile offenders)).

category,[23] whereas in an information-suppressing scheme, the category's lowest-ranked member gains the most from variance within the category, while the highest-ranked member loses the most.[24] For the same reason, participants in an information-suppressing category stand to lose from inclusion of members who drop the average quality level and to gain from those who raise it, while participants in an information-preserving category gain from lower-ranking co-classifieds and lose from higher-ranking ones.

Of course, many categorizations fall in between these extremes, preserving some information about differences among category members, or preserving it for some audiences, while suppressing other information to some or all audiences. For example, students are members of the category that their school comprises and will enjoy (or suffer) an informational signal that is partly a function of the school's reputation (a kind of blender) and partly a function of the student's rank within the school (a blindered metric). Incentives pull in two directions in this case—toward a higher-ranked school for the reputational benefit, and toward a lower-ranked school for the internal competitive advantage.[25]

C. Dilution, Enhancement, and Coalition-Building

When categories are information suppressing, existing members fear category dilution from adding weaker members, and hope for category enhancement by adding stronger members. This can lead groups to adopt a rule such as: we will only add a member if that member raises our average. Incumbents like this rule because it means that their own imputed reputations will only rise as the group grows. But it also means that any new member of such a

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23 This point relates to work on relative preferences—the idea that people are more concerned with their relative ranking within a relevant reference group than they are about absolute measures. *See, e.g.*, Robert H. Frank, Choosing the Right Pond (1985); Richard H. McAdams, *Relative Preferences*, 102 Yale L.J. 1 (1992).

24 A similar intuition underlies the advice to buy the least expensive house on the block—or at least avoid buying the most expensive one. *See, e.g.*, Brendon Desimone, *Don't Buy the Best House on the Block*, Zillow, May 18, 2012, https://www.zillow.com/blog/dont-buy-the-best-house-on-the-block-83915/.

25 This latter force can be accentuated through policies that expressly reward intra-category rank, such as state university admissions policies that guarantee spots to some top percentage of each high school's graduating class. *See, e.g.*, Julie Berry Cullen et al., *Jockeying for Position: Strategic High School Choice Under Texas' Top Ten Percent Plan*, 97 J. Pub. Econ. 32 (2013) (finding behavioral effects of this policy on school choice).

group will be allowing some of her new groupmates to free ride on her above-average quality. The interaction of these motivations makes sense of the quip, "I don't want to belong to any club that would have me as a member."[26] It is hardly surprising, then, that hiring can be so difficult for groups like law school faculties.

Indeed, we might wonder how new members ever get added in such a world. One answer is that membership choices are rarely made for pure status reasons, and instead depend on many other factors that are less sensitive to the relative quality of one's groupmates. The absolute or relative size of a group may also be independently important in conveying a positive signal or in achieving desired outcomes.[27] Another answer is that the potential new members start out in groupings of their own in which their individual qualifications may be partially obscured by the group reputation. So it may be that a new member can raise both the average of the new group she joins and her own perceived quality by making the switch, if it means leaving one cohort in which she is above average for another cohort in which she is also above average, but less so. Other changes in the terms of group membership, including differential monetary or other rewards to different group members based on what they bring to the table, can also make it worthwhile for someone to join a group in which she will be above average.

To be sure, few groups are fully information suppressing. And as we move to categories that fully preserve information, the incentives flip. Now incumbents do not want to admit new members who will make them look bad by comparison, and new members do not want to join groups where they will be perceived as the weak link. If the grouping suppresses information to outside audiences but preserves it internally, the weaker incumbents (who remain internally identifiable) may even fear that higher-quality new entrants will expel them to enhance the group's external reputation. This dynamic provides one explanation for tenure protections; incumbents may be more willing to hire people who are of higher quality and who will raise the average if they need not fear that doing so will lead to their expulsion.[28]

26　Various versions of this quote have been attributed to Groucho Marx. *See I Don't Want to Belong to Any Club That Will Accept Me as a Member,* Quote Investigator, https://quoteinvestigator.com/2011/04/18/groucho-resigns.

27　For example, a certain number of players might be necessary to field a team, or crossing a particular threshold might allow a firm to gain salience as being among the largest of its type.

28　*See, e.g.*, Raghavendra Rau, *The Economic Rationale for Tenured Professors*, Financial Times, June 1, 2014, https://www.ft.com/content/0490cbe4-98bf-11e3-8503-00144feab7de.

Many categories classify people on dimensions other than merit, or group together conditions, causes, or events. If the category is used to raise awareness or attract support, then similar issues arise. Will the group gain or lose more from the new entry, and will the new entrant gain or lose on net? Some categories can become more influential by becoming larger, other things equal, in part because category-mates may be ready-made political allies. Thus, even less compelling entrants or subgroups that differ along certain dimensions may help build a larger and more powerful coalition. These gains from size might be balanced against any losses to the group's distinctive image or cohesiveness.

Category dilution emerges as a particular risk where marginal (or even counterfeit) members of the set cannot be clearly distinguished from their more legitimate counterparts and thus contribute to a blended (and tarnished) reputational image. Consider assistance animals. Despite legal distinctions between service animals and emotional support animals,[29] most members of the general public have no clear idea how these categories work, and many gatekeepers have appeared similarly uninformed.[30] Because anyone can outfit the family pet in a vest that proclaims its status as a service animal, the potential for category dilution is evident.

Following numerous complaints about poorly behaved and faux assistance animals on airplanes, the U.S. Department of Transportation (DOT) recently adopted a final rule addressing the issue.[31] The rule defines "service animals" as those trained to perform work or tasks for a person with a disability; the definition expressly excludes "[a]nimal species other than dogs, emotional support animals, comfort animals, companionship animals, and service animals in training."[32] In addition, the rule permits airlines to require specified DOT

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29 The latter are a recognized form of legally protected assistance animal under some laws, like the Fair Housing Act, but not under others, like the ADA. *See, e.g.*, U.S. Dep't of Housing and Urban Dev., Memo from Sara K. Pratt to FHEO Regional Directors, *New ADA Regulations and Assistance Animals as Reasonable Accommodations under the Fair Housing Act and Section 504 of the Rehabilitation Act of 1973*, Feb. 17, 2011.

30 Travel forums, blogs, social media, and the popular press have been rife with tales of "fake" service animals and emotional support animals. *See, e.g.*, Patricia Marx, *Pets Allowed*, New Yorker, Oct. 13, 2014, https://www.newyorker.com/magazine/2014/10/20/pets-allowed. For a recent exploration of this issue and possible solutions, *see generally* Doron Dorfman, *Suspicious Species*, U. Ill. L. Rev. (forthcoming 2021), https://ssrn.com/abstract=3549572.

31 U.S. Dep't of Transp., Traveling by Air With Service Animals, 85 Fed. Reg. 79,742 (Dec. 10, 2020) (revising 14 C.F.R. pt. 382).

32 85 Fed. Reg. at 79,774 (amending 14 C.F.R. 382.3 to add definition of "service animal"). Because the definition speaks only to the category of animals that

forms, to require that the animal be kept under control, and to treat certain behaviors (repeatedly barking, growling, jumping on people, or urinating or defecating in public) as indications that the animal is not a trained service animal.[33] The capacity to exclude subsets that are especially likely to dilute the group's behavioral profile takes on particular significance where, as here, a category is inevitably at least partially information suppressing.

Similar dilution concerns arise in trademark law, where brand names evoke categories of experiences. As Rebecca Tushnet observes, people are not just drinking a Coke, they are "drinking the good memories associated with Coke and its marketing—they are tasting the trademark."[34] Extraneous entries into the brand name category can dilute that set of associations and alter the consumer experience. Similar considerations explain the dairy industry's opposition to the use of the moniker "almond milk." Conversely, sometimes firms prefer a form of distancing or unbundling from past brand or product experiences. We see something like Lakoff's hedges at work in expressions like "not your father's Oldsmobile" that suggest the new entrant should not be conceptually mingled with the previous category occupants.[35]

D. Aggregations and Evaluations

Some categories are purely descriptive in nature. They are spontaneously constructed around observed phenomena, and are simply designed to convey information about similarities and differences, rather than to make normative judgments or attach consequences. A guide leading a group hike might classify her charges as slow, medium, and fast walkers, for example. We might call these "categories of convenience" because they are a way of organizing and describing observed phenomena. Of course, consequences may later attach. Perhaps the slow walkers must take a break while the fast walkers ascend to a viewpoint. Nonetheless, we can distinguish classifications that descriptively form around aggregations from phenomena that are placed into existing,

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must be accommodated as a matter of antidiscrimination law, airlines are free to permit additional categories of animals to travel. *See, e.g., id.* at 79,751 ("airlines are free to accommodate the transport of miniature horses for passengers if they choose to do so").

33   85 Fed. Reg. at 79,775 (adding 14 C.F.R. 382.73 and 382.75).
34   Rebecca Tushnet, *Gone in Sixty Milliseconds: Trademark Law and Cognitive Science*, 86 Tex. L. Rev. 507, 513-14 (2008).
35   For a discussion of difficulties with this approach, see *Oldsmobile: A Victim of Its Own Brand*, Slate, Dec. 13, 2000, https://slate.com/business/2000/12/oldsmobile-victim-of-its-own-brand.html.

exogenously defined categories that already carry their own evaluative meaning or practical implications.

One way to understand the difference is to ask whether the category carries any significance apart from the information that we could learn by closely studying the aggregation itself. Larry Alexander argues that sorites problems are distinct from other questions involving scalar properties in that we would not even need categories like "heap" or "bald" if we could instantly perceive all the relevant facts (the grains of sand, the number of hairs).[36] But when it comes to categories like "morally permissible," the categorization represents a judgment that is separate and apart from the aggregation of facts and circumstances that make up the act. We would still confront the need for classification even if we could fully know and convey all the relevant particulars.[37] Where categories have independent moral weight, categorization is a moral conclusion that may simply defy continuization.[38]

We might say the same of some legal binaries, like being found guilty, or liable—despite differences in degrees of culpability or factual certainty. Another much-noted binary is the concept of consent, which is required for certain legal consequences to obtain.[39] Yet there are lots of ways that consent can be eroded, undermined, or moved off the mark of being free and fully informed—and not all of them seem equally problematic. Assent obtained by puffery seems different from assent obtained through fraud, and both seem different from assent obtained at gunpoint. If we put them all in the "no consent" category, we are grouping unlike things together. But if we deem some versions of coerced or uninformed assent to count as consent, we are grouping together unlike things as well, and expanding the ways in which people can use unsavory practices to obtain legally valid consent.

An interesting question for law is whether a morally charged legal binary like consent can accommodate an intermediate category. For a deontologist committed to classifying behavior in a binary fashion as morally permissible or impermissible, it may seem anathema to create finer gradations that appear to continuize degrees of wrongness.[40] Where a category is evaluative in

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36   Larry Alexander, *Scalar Properties, Binary Judgments*, 25 J. Applied Phil. 85, 89-90 (2008).

37   *Id.*

38   *Id.*; *see also* Re'em Segev, *Continuity in Morality and Law*, 22 Theoretical Inquiries L. 45 (2021).

39   *See, e.g.*, Alexander, *supra* note 36, at 94-96.

40   Systems of morality need not be binary, of course. Islamic law, for example, recognizes five moral categories. *See, e.g.*, Rafat Y. Alwazna, *Islamic Law: Its Sources, Interpretation, and the Translation of It into Laws Written in English*, 29 Int. J. Semiot. Law 251, 252 (2016) (explaining that acts are classified as

nature, and not merely a category of convenience, more turns on inclusion than fine-tuning informational signals about the category's contents; there is an exogenously determined meaning assigned to inclusion or exclusion. By contrast, when the consequences are perfectly contingent on the category's actual composition, the aggregation constitutes the category.

II. Controlling Category Costs

As the discussion so far has emphasized, categorization is a way of packaging and organizing information. Categories make the world legible by blunting certain informational signals and accentuating others. In so doing, they avoid the prohibitive administrative and specification costs that would be associated with perfect individuation. But because information has consequences, categorization also generates costs. As the previous Part detailed, systems of classification unavoidably manage heterogeneity, both within and between categories. As they trade off precision for tractability, they induce participants and stakeholders to vie for more favorable informational signals—behaviors that may prove wasteful and destabilizing. How can these costs be controlled? Finer specification might seem like the obvious answer, but it is only one possible solution, as the sections below explain. Making categories and decision increments *larger* can also control costs.

A. Finer Specification

One approach is to refine the informational signal through increased specification—thinner, more precise categories or, at the limit, some form of continuizing. If everything is proportionately adjusted and accurately priced, then there is no discontinuity around which to build strategies.

Continuizing, however, is not always straightforward or even possible. Although any continuum can be broken up into categories, the reverse is not true. In some cases, this is because the characteristics that form the basis for classification are multiple. Even if each of these represents a continuum, there may be no consensus about how they should be weighted relative to each other or how they interact, which prevents readily reducing them to a single continuum.[41] Using categories rather than continua may represent a kind of

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prohibited, obligatory, recommended, permissible, or abominable). I thank Aziz Huq for this point.

41 *But see* Eric Kades, *The Charitable Continuum*, 22 Theoretical Inquiries L. 285 (2021) (suggesting that multiple continua relating to the degree of charitability can be combined into a workable single continuum, despite some difficulties).

compromise, when multiple criteria are in play and there is disagreement about how they relate to each other.[42]

In other cases, categories simply do not correspond to any continua at all. We put tigers in a different category from elephants, but it is not because tigers have smaller trunks or because elephants have fewer stripes. Their differences are not ones of degree, but rather are differences in kind. Continuizing may be unsuitable or undesirable for other reasons as well: the costs of customization may be high, the computations necessary to continuize treatment may be difficult, or normative considerations may resist breaking down a binary. Continuizing may also simply require handling a larger spectrum of phenomena than would be necessary if certain above- or below-threshold entries were excluded categorically, as through safe harbors.

A closely related approach to continuizing is to pair a set of chunky classifications with a scalar variable. When law needs to deal in categories, finding other margins along which to continuize can offer a way of softening the consequences. We have already observed something like this in Lakoff's hedges, where a verbal modifier adds a scalar to the otherwise categorical determination. We also see it in the law's overlay of scalar consequences (prison terms, fines, damages) onto binary classifications (liability or no liability, guilt or innocence). And we see it in university admissions decisions where an on/off choice (admitted or rejected) is paired with differential pricing—some students receive scholarships (negative prices) while others get a discount on tuition, and still others pay sticker price.[43] Applying a scalar variable may be impossible in some contexts, however, whether because the information necessary to apply it is unavailable, or because legal restrictions or moral considerations place a particular form of individuation (such as adjusting insurance premiums to account for genetically determined health risks) off the table.

B. Offsetting Incentives

Both continuizing and adding a scalar variable represent ways of slicing categories more finely, whether by ditching categories altogether or softening their discontinuous effects by pricing inclusion or exclusion. But there are other approaches to category costs that rely on lumping rather than splitting.

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42   *See* Saul Levmore, *Public Choice and Law's Either/Or Inclination*, 79 U. Chi. L. Rev. 1663, 1668 & n. 8 (2012) (reviewing Katz, *supra* note 2).

43   *See, e.g.*, Michael Rothschild & Lawrence J. White, *The Analytics of the Pricing of Higher Education and Other Services in Which the Customers are Inputs*, 103 J. Polit. Econ. 573 (1995).

These possibilities proceed from the observation that there are sometimes offsetting incentives associated with category structure or membership. As a result, bulking up categories can make them more stable and less vulnerable to strategic behavior.

We have already seen some of these opposing incentives. Information-suppressing and information-preserving categorization schemes pull in opposite directions. Significantly, many categories have multiple audiences, some of whom are able to observe intra-category heterogeneity and others of whom will focus on inter-category comparisons. Most people do not really want to own the least desirable house on the block, even if this is best for home values, because it is hard on the ego when interacting with neighbors. Most professors do not really want to be the least valuable member of their faculty, even though this would win them the greatest amount of reflected glory; contributing less than those around you is demoralizing, and not fully opaque to one's colleagues and students.

Categories that work partly as blenders and partly as blinders deliver payoffs that are partly a function of spillovers from category-mates and partly a function of comparisons among them. This combined payoff is likely to dampen the effects of intra-category variance among members because there are compensating effects from ranking lower or higher. The result is likely to be less turnover and reduced costly strategizing. Of course, there is often a scalar operating in the background as well, whether a premium associated with buying the smallest house in the neighborhood or a lower salary (or heavier course load) for faculty who make smaller scholarly contributions. But even if this form of individuation is absent for some reason, the offsetting incentives do some of the work.

Similarly, there is often a tradeoff between building a larger coalition and avoiding dilution (or diminished cohesiveness or distinctiveness) as a result of new entries. Again, the incentives may not offset perfectly, but the compensating effect of size and clout can enable some variance to stably exist within categories. Social movements, academic disciplines, schools of thought, and affinity groups offer everyday examples of this dynamic: a bigger tent can risk internal tensions, mission drift, or changes in core values as heterogeneity rises, but it can also advance political power and network effects through sheer numerosity. Larger and more durable categories also provide more chances for the contributions of various members to even out over time, despite domain-specific differences.[44]

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44   *Cf.* Robert C. Ellickson, Order Without Law: How Neighbors Settle Disputes 55-56 (1991) (discussing "multiplex" interactions among neighbors that allow for reciprocity over time).

Categories that endure can also carry offsetting implications. Consider again the problem of air travelers falsely opting their animals into the category of service animals in order to travel with their pets without paying fees. Although a new DOT rule offers a regulatory solution by narrowing the qualifying types and functions of service animals,[45] approaches that rely instead on offsetting implications might address at least some aspects of the problem. An alternative suggested by online commentators (and independently by one of my colleagues) would be to require that anyone who flies with an assistance animal on one occasion must travel with it on every flight thereafter.[46] This approach would make traveling with an assistance animal a bundled choice. Because it is probably burdensome to take the family pet on every business trip, the rule could produce useful separation.[47]

These opposing considerations will not always be sufficient to make categories work well, but they may have the practical effect of reducing the incentives to enter, leave, or contest group boundaries, and thereby drive down the cost and instability that categories can introduce. In short, the offsetting implications of category membership can stand in for greater precision in addressing intra-category variance.[48]

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45   *See supra* notes 31-33 and accompanying text.

46   *See, e.g.,* Matthew Klint, *Debate: The Abuse of "Emotional Support" Animals*, Boarding Area (Nov. 9, 2017), https://liveandletsfly.boardingarea.com/2017/11/09/emotional-support-animal-airline-abuse/ (proposing the rule of "Travel Once With a Pet, Always With a Pet!").

47   The strategy does not work if one member of a family travels only on excursions where a pet would be a welcome addition, since that family member could be the one who claims the need for assistance. This approach would also be inappropriate in instances where a person's legitimate need for an assistance animal varies over time based on factors like the kinds of supportive assistance available in flight or at one's destination.

48   An analogy can be drawn to cross-subsidies, which represent an alternative to systems of taxes and subsidies. *See generally* John Brooks, Brian Galle & Brendan Maher, *Cross-Subsidies: Government's Hidden Pocketbook*, 106 Geo. L.J. 1229 (2018). For example, to get public utilities into rural areas that would otherwise be too costly to serve, government can either subsidize those areas and tax everyone else, or else make utility service an unbreakable bundle and require service to both profitable and unprofitable areas alike, with one cross-subsidizing the other. *Id*. at 1244.

C. Chunkier Choices

Chunking strategies can also address the potential for categories to unravel through a sequence of individual decisions. Where a category line does not correspond to a natural discontinuity it may become vulnerable to pressure by those with an interest in moving the line. Each shift produces new inclusions and exclusions that may, in turn, drive further shifts. Making category entrances and exits a bundled rather than one-by-one proposition can arrest this dynamic.

Avinash Dixit and Barry Nalebuff illustrate the hazards of piecemeal category decisions—and the power of a bundling solution—with a diabolical voting puzzle: A group of ten law firm associates, aware of their individual rankings, must collectively select the cutoff for making partner.[49] All of them reject the existing standard, under which none of them makes partner, in favor of a rule under which they all make partner.[50] But deliberations do not stop there. The nine strongest candidates propose a standard that would enable only the top nine candidates to succeed. This, they observe, would improve the quality of the partnership pool. The weakest associate disagrees but is soundly outvoted.[51] Next, the eight strongest associates realize that they can improve the average quality of the partnership pool by raising the bar again, so that only the top eight will clear it. Again, this proposal passes with only one dissenter, the ninth-best associate. The lowest-ranked associate supports the change because it puts a stronger candidate together with him in the pool of people denied partnership, reducing the stigma of that status.[52] And so the process continues, with all stronger candidates and all weaker candidates voting together as a bloc to move the bar each increment higher to shift one person from partner-earning to partner-losing status. Eventually, the associates vote nine to one to return to a world where no one makes partner—a result none of them wanted.[53]

Greater individuation of payoffs—weaker candidates making side payments to stronger candidates, for example—could prevent this result. But there is another alternative. If a bloc of weaker associates could have committed to vote as a unit, the moving partnership line could not have advanced. Such concerted action is more likely if the line can *only* move in large increments rather than in fine gradations because everyone is subject to the potential change

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49 Avinash K. Dixit & Barry J. Nalebuff, Thinking Strategically: The Competitive Edge in Business, Politics, and Everyday Life 245-48 (1991).

50 *Id.* at 245.

51 *Id.*

52 *Id.* at 246.

53 *Id.*

at the same time.[54] Here we see that category shifts, like other incremental changes, are subject to divide-and-conquer strategies.[55] Making a larger shift an all-or-nothing proposition can keep a category from unraveling.[56]

A similar intuition is at work in Thomas Schelling's analysis of focal solutions—stable bargaining outcomes that resist further shifts by virtue of their "prominence, uniqueness, simplicity, precedent, or some rationale that makes them qualitatively different from the continuum of possible alternatives."[57] Such focal points can make small moves in either direction untenable. As Schelling explains, "One cannot expect to satisfy an aggressor by letting him have a few square miles on this side of a boundary; he knows that we both know that we both expect our side to retreat until we find some persuasive new boundary that can be rationalized."[58] This point is related to the idea of natural kinds or "carving nature at its joints" when making classifications.[59] Consider a distinct population of animals like Himalayan wolves.[60] One might ask whether they are the same or different from other species of wolves, but it would make no sense to say that some of them are and some of them are not. The chunky inclusion or exclusion choice works like a take-it-or-leave-it offer for a classifier, and can create a stable stopping point.

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54   *Id.* at 247 ("There is safety when individuals agree to consider reforms only as a package rather than as a series of small steps.").

55   *See, e.g.*, Eric Posner, Kathryn Spier & Adrian Vermeule, *Divide and Conquer,* 2 J. Legal Analysis 417 (2010).

56   For similar reasons, the success of a legal reform may depend in part on the increments in which it is undertaken. *See* Saul Levmore, *Interest Groups and the Problem with Incrementalism*, 158 U. Pa. L. Rev. 815, 819-23 (2010) (giving the example of a ramp requirement to make buildings accessible to people with disabilities, which might be extended incrementally from new buildings to existing large commercial buildings, to smaller buildings, and so on, with each already-regulated group supporting a further expansion).

57   Thomas C. Schelling, The Strategy of Conflict 70 (1960).

58   *Id*. at 111-12; *cf.* Levmore, *supra* note 42, at 1682 (observing that considerations like keeping a city together can make preferences about boundary placement nonlinear).

59   The metaphor is from Plato. *See, e.g.*, Matthew Slater & Andrea Borghini, *Introduction: Lessons from the Scientific Butchery*, *in* Carving Nature at Its Joints: Natural Kinds on Metaphysics and Science 1 (Joseph Kelm Campbell et al. eds., 2011).

60   *See* Rajat Ghai, *New Study Adds to calls for Formal Recognition of Himalayan Wolf*, Down to Earth, Nov. 27, 2018, https://www.downtoearth.org.in/news/wildlife-biodiversity/new-study-adds-to-calls-for-formal-recognition-of-himalayan-wolf-62200.

The next Part uses the much-studied context of insurance markets to illustrate how these offsetting and bundling strategies can operate as alternatives to finer specification in risk pricing.

III. Arresting Unraveling in Insurance Markets

The potential for adverse selection to unravel insurance markets is well known.[61] If information asymmetries or policy choices prevent insurers from pricing differences among heterogeneous insureds who are aware of their own risk characteristics, the risk pool may become unstable. When greater individuation is unavailable as a practical, legal, or normative matter, controlling strategic behavior becomes a primary concern.[62] Forced inclusion in a risk pool is a blunt solution, but other forms of bundling and offsetting can also offer traction.

A. Adverse Selection

Consider group health insurance that pools together high-risk and low-risk people. Suppose it is impossible for insurers to charge them different rates. This might be due to an information asymmetry—the low-risk people and the high-risk people know who they are, but the insurer cannot tell them apart.[63] Or it might stem from a conscious policy decision to ignore certain kinds of risk-relevant (but morally irrelevant) information, like genetic predispositions to certain conditions.[64] Either way, individual members who are aware of their own characteristics will have incentives to leave or enter the pool, as the case may be. If the insurer must charge everyone the same price, it will be too high for the low-risk people and a steal for the high-risk people. The

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61 *See, e.g.*, Kenneth J. Arrow, *Information and Economic Behavior*, *in* 4 Collected Papers of Kenneth J. Arrow: The Economics of Information 136, 147–48 (1984); *see also* George A. Akerlof, *The Market for "Lemons": Quality Uncertainty and the Market Mechanism*, 84 Q. J. Econ. 488, 489–92 (1970) (using the example of used cars to illustrate the potential for adverse selection to unravel markets).

62 *See, e.g.*, Ronen Avraham, *Optimal Categorization*, Prawfsblawg, May 21, 2020, https://prawfsblawg.blogs.com/prawfsblawg/2020/05/posted-on-behalf-of-ronen-avraham-as-part-of-the-legal-discontinuities-online-symposium-fennels-excellent-paper-deals-wi.html.

63 *See, e.g.*, Michael Rothschild & Joseph Stiglitz, *Equilibrium in Competitive Insurance Markets: An Essay on the Economics of Imperfect Information*, 90 Q.J. Econ. 629, 632 (1976).

64 *See, e.g.*, Genetic Information Nondiscrimination Act of 2008, Pub. L. No. 110-233, 122 Stat. 881 (codified in scattered sections of 26, 29, and 42 U.S.C.).

former will run for the exits, while the latter flood in, and the now-changed composition (riskier on average) forces price increases for everyone, and spurs further departures among the less risky.[65]

This is, of course, the much-noted problem of adverse selection.[66] Inclusion in the insurance pool delivers to the insurer a blended signal of average riskiness upon which pricing and coverage must be based, a signal that becomes faultier for a given member the more her own risk profile diverges from that average. Without any way to compensate for those differences, the pool's composition becomes unstable.

B. Bundling Risk

An initial impulse in the insurance context is to push for finer-grained classification and pricing of each separate risk. Counterintuitively, however, stability might also be improved by bundling more risks together to make larger and more durable pools. This can be done by broadening the set of risks covered by insurance, if different risks are not highly correlated. Someone who is at low risk for kidney disease might be at high risk for breast cancer and vice versa. Of course, many risks correlate roughly with age, so there are very real differences between those most likely to remain healthy in a given year and those likely to become ill. But here too, we can make the bundle bigger (to encompass an entire life, for example) and remove more of this correlation among risks—although obviously not all.[67]

Given what people know about their own particularized risk levels, some would pay more to have a given risk covered, while others would pay less. Bundling risks together makes it possible to carry out a type of price discrimination: each person is effectively paying more for the risks that are greater threats to her and less for the ones that are more remote. This same

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65 *See, e.g.*, Howard Kunreuther & Mark Pauly, *Insurance Decision-Making and Market Behavior*, 1 Found. & Trends in Microecon. 63, 100 (2005). I am setting aside for the moment an important countervailing force: the tendency of less risky individuals to differentially seek insurance. *See infra* note 74 and accompanying text.

66 *See, e.g.*, *id.*; Arrow, *supra* note 61, at 147-48; Peter Siegelman, *Getting People to Lump or Split Themselves: Pooling vs Separation*, U. Chi. L. Rev. Online, Mar. 30, 2020, https://lawreviewblog.uchicago.edu/2020/03/30/getting-people-to-lump-or-split-themselves-pooling-vs-separation-by-peter-siegelman/.

67 *See, e.g.*, Richard J. Zeckhauser, *Coverage for Catastrophic Illness*, 21 Pub. Pol'y 149, 159 (1973) (observing that "even infancy is too late for contracting" to spread health risks fully, because "[b]y the time a child is born, his catastrophic health needs are determined to a substantial extent in the statistical sense").

principle explains the value of bundling together TV channels or periodical subscriptions (to use some examples in the existing literature) where there is imperfectly correlated demand for each subset.[68] If Netflix bundles together a package of shows, some of which I would pay little for and others that I would pay a lot for, and other viewers have offsetting preferences, we can all pay the same price for the bundle and yet implicitly be paying different prices for the parts of the bundle that each of us values less and more.[69]

In this way, an all-or-nothing bundle can attract many consumers who would not voluntarily purchase every portion of it à la carte. Although mandatory pooling is often prescribed as a response to adverse selection, take-it-or-leave-it bundling provides a potential alternative.

C. Time Bundles

We have already seen one reason why bundling in the dimension of time can combat instability: longer-lasting risk pools will encompass more risks, not all of which are well correlated with each other. These offsetting risk profiles can reduce the overall variance within a pool of insureds.

Making bundles temporally larger also serves another purpose: it reduces any information asymmetries that may exist between insurer and insured. It does so not by increasing the amount of information available to the insurer, but rather by decreasing the amount of information available to the insured. As time horizons extend, it becomes less clear what risks will or will not eventuate. A category that endures bundles together more, and less certain, futures; it places insureds at least partially behind a veil of ignorance.[70] Here too, bundling can make mandatory pooling unnecessary; it creates a take-it-or-leave-it offer that most people find it in their interest to take.

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68   *See, e.g.*, Lee Anne Fennell, Slices and Lumps: Division and Aggregation in Law and Life 149-50 (2019); Hal R. Varian, *Economics of Networked Information: Pricing Information Goods*, *in* Scholarship in the New Information Environment 19, 23 (Carol Hughes ed., 1996). A groundbreaking paper by George Stigler introduced this point in the context of bundled sales of movies to theaters. George J. Stigler, United States v. Loew's Inc.: *A Note on Block Booking*, 1963 Sup. Ct. Rev. 152 (1963).

69   *See, e.g.*, Chris Dixon, *How Bundling Benefits Sellers and Buyers*, cdixon (blog), July 8, 2012, https://cdixon.org/2012/07/08/how-bundling-benefits-sellers-and-buyers; Joel Waldfogel, *How Digitization Has Created a Golden Age of Music, Movies, Books, and Television*, 31 J. Econ. Persp. 195, 210-11 (2017).

70   The veil of ignorance as a thought experiment aimed at addressing self-dealing in collective decision-making is famously explored in John Rawls, A Theory of Justice 136-42 (1971).

To be sure, durability alone may not be enough to make categories attractive and stable. But enduring categories offer a platform for adding offsetting features or consequences. Consider the proposal that health insurance be packaged with a tontine feature that pays out bonuses to those who turn out to need health insurance the least.[71] Those who are low risk and who therefore derive less value from the insurance feature could derive more value—at least in expectancy—from the survival feature, making the two together worthwhile.[72] Offsets like these can blunt strategic choices about category inclusion.

Lengthening the temporal scale can operate as a strategy-proofing move in other category contexts as well. For example, if one state or locality is a better fiscal deal during one part of the lifecycle (say, when kids are in school) and a worse fiscal deal during another part of the lifecycle (say, in retirement), those implications would tend to offset—if it were not possible to category-hop through the lifecycle simply by changing residences.[73] Certain forms of category durability, such as actually preventing people from moving among states, are obviously impossible as a legal matter and undesirable as a normative matter. Yet it may be possible to replicate some of the beneficial effects of durability by making sets of enduring consequences follow from, say, a taxpayer's initial election. Similarly, certain policy choices in the insurance context, such as those that facilitate portability among employers' plans, can replicate longer time horizons.

D. Bundles of People

So far, we have been discussing insurance bundling that offsets different intra-personal risk factors. People, in effect, are their own bundles of risk attributes, and the lack of perfect correlation among these attributes can make risk pricing more accurate even as insurance becomes lumpier. Another facet of people-as-bundles offers an empirically significant bulwark against the relentless logic of adverse selection: risk *attitudes* are unbreakably bundled with risk *attributes*. If the people who are the best risks are also the most risk

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71   *See* Tom Baker & Peter Siegelman, *Tontines for the Invincibles: Enticing Low Risks into the Health-Insurance Pool with an Idea from Insurance History and Behavioral Economics*, 2010 Wis. L. Rev. 79 (2010).

72   *See id.*; *See also* Daniel J. Hemel, *Pooling and Unpooling in the Uber Economy*, 2017 U. Chi. Legal Forum 265, 280 (discussing the potential for longevity risk to offset health risks and thereby ease adverse selection problems if the two types of risks are pooled together).

73   For a discussion of this problem and some possible solutions, see Julie Roin, *Changing Places, Changing Taxes: Exploiting Tax Discontinuities*, 22 Theoretical Inquiries L. 335 (2021).

averse and most motivated to seek out insurance, while those who are the worst risks are too inattentive or cavalier to opt into the insurance pool, the result can be "propitious selection" in which the better risks are more eager to enter (and stay in) the risk pool.[74]

It is also possible for risk offsets to occur *between* pool members. Thus, making the minimum insurance bundle yet bigger, to encompass entire families or communities or workplaces, produces additional opportunities for risk offsetting. Men and women face different risks, on average, but many families include both, as well as some younger and some older members. If insurance were offered as an all-or-nothing deal, it might be on balance valuable to the group, despite distributive differences in the expected value realized by particular individuals. To be sure, if the underlying groupings are malleable, some people may strategically enter or leave them.[75] Moreover, group memberships that are confined to certain parts of the lifecycle (such as the working years) may not bundle risk as well on the temporal dimension. But groups that are relatively durable and important to their members for exogenous reasons offer promising platforms for risk offsetting.

Bundling together these groups makes choices about entering or leaving the risk pool lumpier and can keep piecemeal defections from unraveling the market. Group-based offsetting is not confined to insurance contexts. It features prominently in many business models, such as all-you-can-eat buffets. Some will eat less and others will eat more, yet everyone is charged the same price. One reason the model does not collapse is that there tend to be offsets within patron groups—families, business colleagues, and so on. That makes the decision to go to the buffet a lumpier one, and hence less subject to adverse selection, than would be the case for choices by individuals.[76]

IV. Category Breadth

The previous Part used the example of insurance to illustrate how category expansion and chunkier decision increments can stand in for greater individuation

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74   *See* David Hemenway, *Propitious Selection*, 105 Q. J. Econ. 1063 (1990); *see also* Siegelman, *supra* note 66.

75   *See, e.g.*, Lee Anne Fennell, *Relative Burdens: Family Ties and the Safety Net*, 45 Wm. & Mary L. Rev. 1453, 1481-87 (2004).

76   Of course, some groupings, like sports teams, can wreak havoc on an all-you-can-eat buffet because the expected consumption offsets among members do not exist. *See* Zachary Crockett, *The Economics of All-You-Can-Eat Buffets*, The Hustle, Jan. 25, 2020, https://thehustle.co/the-economics-of-all-you-can-eat-buffets/.

and thereby forestall strategic behavior. In this last Part, I extend this Article's analytic framework to category breadth, which is also vulnerable to gaming as stakeholders attempt to gain a more favorable informational signal from the categorization scheme. A bundling strategy—here, bundling together the purposes that a given category serves, and the ways in which its information signal will be used—can help to counter strategic category construction. I start by considering the special issues presented by empty (or nearly empty) categories, and then turn to questions of interoperability and arbitrage within broader categories. Finally, I show how offsetting implications can dampen perverse incentives regarding category breadth and make the categorization scheme less prone to gaming.

A. Empty Sets

Categories often become legally significant when they are entirely empty—or in immediate danger of becoming so. This gives stakeholders who wish to trigger (avoid) that legal response an incentive to define sets in a narrower (broader) way, other things equal. Consider species definition. Depending on how a species is defined, extinction may loom as an immediate threat, a remote risk, or no risk at all. This determines whether a particular animal receives legal protection as a member of an "endangered" or "threatened" species.[77] To take a recent example, a wildlife advocacy group has sued over the near-extinction of the red wolf; it claims that only 14 individual red wolves are known to remain in the wild.[78] But scientists have debated whether the red wolf is a separate species at all, rather than only a hybrid of the gray wolf and the coyote.[79]

Why should this matter? If it is bad for certain creatures to be erased from the planet under one system of human classification, why should it be considered less bad under another system of classification? The difference, apparently, inheres in whether we have lost all of a particular category or merely some of a larger category. And evidence suggests a real discontinuity in

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77   *See* The Endangered Species Act of 1973, 16 U.S.C. §1531 et seq. Notably, the Endangered Species Act defines the term "species" to include subspecies, varieties, and (for vertebrates) "distinct population segments."

78   *See Press Release*, Center for Biological Diversity, (Nov. 19, 2019), https://biologicaldiversity.org/w/news/press-releases/lawsuit-filed-over-trump-administration-failure-update-plan-save-red-wolves-2019-11-19/.

79   *See* Zimmer, *supra* note 1. A recent report supports the red wolf's separate taxonomic status. National Academies Press, *Evaluating the Taxonomic Status of the Mexican Gray Wolf and the Red Wolf* 68-69 (2019), https://www.nap.edu/download/25351#.

attitudes about preservation when it means the difference between extinction and survival of the species, as compared with having more or fewer members of a thriving species.[80] In the case of animals, the difference seems sensible if the contents of a particular species-bucket correspond to the capacity to produce more of the same type of animal. But species concepts are multiple and contested, and do not always align with this reproductive criterion.[81] Yet there still appears to be a deep psychological aversion—reflected in law—to losing all of some category.

We see this same phenomenon in regulatory takings doctrine. Regulation that goes "too far" (in the words of Justice Holmes) is a taking that must be compensated.[82] One of the most interesting and important tests of whether regulation has gone "too far" is the one articulated by the U.S. Supreme Court in *Lucas v. South Carolina Coastal Commission*: a regulation will be a taking if it deprives the owner of "all economically beneficial use."[83] The question of what counts as "all" depends in turn on what base it is compared against—what is in the category? If I own two lots, for example, and the value of one is taken away entirely, have I lost "all" or merely half? This is the so-called "denominator problem," and despite recent grappling, the Court has not come up with a clear-cut solution to it.[84]

This tendency to take complete losses more seriously can be seen more generally in the law's aversion to complete bans, a point recently explored by Joseph Blocher.[85] Banning all of a particular form of speech, for example, (as

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80 *See, e.g.*, Göran Bostedt, *Threatened Species as Public Goods and Public Bads*, 13 ENVTL. & RESOURCE ECON. 59, 61 (1999) (reporting on survey evidence suggesting favorable attitudes toward the Swedish wolf, but "no significant increase in the benefit estimates with an increasing 'supply' of wolves," which the author "interpreted as implying that the respondents mainly valued 'securing' the survival of the wolf, and not the wolf population level in itself.").

81 *See, e.g.*, Judith K. Crane & Ronald Sandler, *Species Concepts and Natural Goodness*, *in* CARVING NATURE AT ITS JOINTS: NATURAL KINDS IN METAPHYSICS AND SCIENCE 289, 291-92 (Joseph Kelm Campbell et al. eds., 2011); Michael Devitt, *Natural Kinds and Biological Realisms*, *in* CARVING NATURE AT ITS JOINTS, *id.* at 155.

82 Pennsylvania Coal Co. v. Mahon, 260 U.S. 393, 415 (1922).

83 Lucas v. South Carolina Coastal Council, 505 U.S. 1003, 1019 (1992). This formulation assumes that the uses in question were not already prohibited by background principles of law. *See id.* at 1027-30.

84 *See* Murr v Wisconsin, 137 S. Ct. 1933 (2017) (establishing a multifactor test for determining the appropriate denominator); Stewart E. Sterk, *Dueling Denominators and the Demise of* Lucas, 60 ARIZ. L. REV. 67 (2018).

85 Joseph Blocher, *Bans*, 129 YALE L.J. 308 (2019).

the City of Ladue did when it prohibited signage on residential properties) is treated more strictly than banning some fraction of a type of speech, or even of several types of speech.[86] The distinction suggests that there is something especially problematic about the categorical nature of the ban, which takes away an entire medium of expression. But the ban is only categorical once we define categories; prohibiting flashing neon signs in residential lawns would also forbid an entire (if much narrower) type of speech. The legitimacy of category construction in this context—and, accordingly, whether a regulation is considered a regulatory ban—presumably has something to with the availability of close substitutes.[87]

An interesting feature of the "empty category" analysis is that it is often directed at answering an all-or-nothing question. As Frank Michelman observes, takings law asks not "how much" but rather "whether or not."[88] The distance metaphor of regulation going "too far" sounds scalar, but the determination is binary. Likewise, a court must decide whether to uphold or strike down a ban, and an agency must decide whether to list or delist a particular species. Category emptiness, real or threatened, often flips a doctrinal or policy switch—a fact that leads to gaming around categories.

If an on/off binary leads to category manipulation, continuizing might seem like the obvious antidote. Consider again regulatory takings law. Making *every* diminution in value compensable seems to offer a way out.[89] It would eliminate the denominator problem outright, and with it any concerns about property owners strategically building empty buckets. But this solution comes with its own disadvantages in the form of high administrative costs and potential overdeterrence of valuable legislation. As Justice Holmes put it, "[g]overnment hardly could go on" if every loss in value caused by government action had to be compensated.[90]

Yet beyond these practical concerns, the emptiness of some categories might signify that a normatively significant threshold has been crossed, marking a difference in kind rather than one merely of degree. This echoes the idea that

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86   City of Ladue v. Gilleo, 512 U.S. 43 (1994); Blocher *supra* note 85, at 327-28.
87   *See* Blocher, *supra* note 85, at 351-60 (discussing how a functional analysis that looks at adequate alternatives might play out in examining bans on firearms).
88   *See* Frank I. Michelman, *Property, Utility, and Fairness: Comments on the Ethical Foundations of 'Just Compensation' Law*, 80 Harv. L. Rev. 1165, 1233 (1967).
89   *See* Richard Epstein, Takings (1985). Interestingly, Epstein also engages in the frame-widening move of considering "implicit in-kind compensation" for alleged takings—an approach that enables offsets by making the unit of analysis bigger. *See id.* at 195-97.
90   Pennsylvania Coal Co. v. Mahon, 260 U.S. 393, 413 (1922).

some categories are evaluative in their own right, and not merely descriptive of their contents. If certain kinds of losses exhibit threshold effects, where diminutions cause little harm (and perhaps remain readily reversible) until they cross some critical point, then placing a legal red flag at that critical point makes sense. To be sure, human-constructed categories may do a poor job of identifying true discontinuities in social or natural phenomena, given the potential for manipulation. But continua might do even worse by applying a scaled response if the true situation is nonlinear.

Nonetheless, making legal consequences turn on category emptiness is likely to distort the way categories are constructed. Significantly, however, incentives with respect to category breadth can also run in the opposite direction, as the next section explains. This observation suggests another way to approach the problem of strategizing around category breadth.

B. Interoperability and Heterogeneity

One potential consequence of placing things in the same category is that it marks out the range for interactivity or interoperability. Being placed with other animals in the same species classification has this effect where breeding protocols and relocation of animals depend on it—an issue that has recently arisen with respect to tigers.[91] Here, the wider classification provides more latitude to mix and match tigers to support the sustainability of tigers generally. But to the extent that the subsets of a broader class are nonfungible, defining the species more broadly may do less well at tracking each subset's decline.

Scholars have made parallel points in other contexts. In considering the optimal design of tradeable currencies aimed at achieving environmental objectives, J.B. Ruhl and James Salzman vividly articulate a tradeoff between "fat and sloppy" and "thin and bland" classifications.[92] Broadening the pool within which pollution or habitat permits can be traded increases intra-category heterogeneity. This thickens the market to facilitate more trade and makes the system more useful to participants.[93] But it also means that non-fungible things are being treated as fungible.[94] For example, if land at the edge of a patch of habitat is preserved as part of a trade that permits development

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91 *See, e.g.*, Andreas Wilting et al., *Planning Tiger Recovery: Understanding Intraspecific Variation for Effective Conservation*, 1 Sci. Adv. (2015), https://advances.sciencemag.org/content/advances/1/5/e1400175.full.pdf.

92 *See* James Salzman & J.B. Ruhl, *Currencies and the Commodification of Environmental Law*, 53 Stan. L. Rev. 607 (2000).

93 *Id.*

94 *Id.*

within the patch's interior, the impact from the development may change as a result—the shape and contiguity of the habitat patch matters to the value of the ecological benefits it produces.[95]

Moreover, the larger the universe across which trades are permitted—that is, the more alternatives that are included in the category—the more likely it is that tradeable entitlements will be put to maximum use. Consider transferable development rights (TDRs), which make alienable an individual landowner's unused rights in her legally permitted envelope of development. Suppose, for example, that an owner is entitled by the applicable zoning restrictions to build a four-story building, but for whatever reason finds a three-story building works best for her needs. If there are no TDRs at all, the building has excess capacity in the domain of height that simply goes unused. This may be the expected or intended result: height limits (like all-you-can-eat buffets) may be set up in a manner that assumes not everyone can make full use of them.[96] There may also be a desire to keep all buildings below some absolute threshold of height, not just keep development height in the area below some *average* height.

If the extra height can be transferred, the scope of possible transfers determines how thick the resulting markets will be and how likely it is that the excess capacity will be used.[97] For example, the building owner might be allowed only to transfer height to other buildings she owns, or other buildings in the same block, or other buildings that have certain characteristics. The more restrictions, the less likely it is that a transfer will occur; the owner may instead simply hang onto her entitlement for possible future use. Permitting

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95 *See, e.g.*, Todd G. Olson et al., *The Habitat Transaction Method: A Proposal for Creating Tradable Credits, in Endangered Species Habitat*, *in* Building Economic Incentives into the Endangered Species Act 27, 28–30 (Hank Fischer & Wendy Hudson eds., 1994); Jonathan Remy Nash, *Trading Species: A New Direction for Habitat Trading Programs*, 32 Colum. J. Envtl. L. 1, 20-25 (2007).

96 For similar reasons, TDRs need not signal a less restrictive land use regime; they may instead be used in conjunction with stricter background limitations to constrain development on net. *See, e.g.*, Roderick M. Hills, Jr. & David Schleicher, *Building Coalitions Out of Thin Air: Transferable Development Rights and "Constituency Effects" in Land Use Law*, 12 J. Legal Analysis 79, 93 (2020) ("TDR programs premised on more restricted zoning become just one more tool to cut back on development.").

97 *See* John Infranca, *Slicing (and Transferring) Development*, U. Chi. L. Rev. Online (March 30, 2020) https://lawreviewblog.uchicago.edu/2020/03/30/slicing-and-transferring-development-by-john-infranca/; Arik Levinson, *Why Oppose TDRs?: Transferable Development Rights Can Increase Overall Development*, 27 Reg. Sci. & Urb. Econ. 283 (1998).

more transfers effectively allows height averaging across a larger set of properties, which enables more variance—both in absolute building heights and in where extra height gets added.[98]

C. Harnessing Offsetting Implications

As the sections above have suggested, people may have incentives to narrow or enlarge the breadth of categories, but sometimes these considerations pull in different directions. Categories can serve as compromises when a larger classification is desirable for one purpose and a narrower one for another.

   Consider again the case of species definition. If the category is broadened to include groups that are thriving as well as groups that are struggling, we may perceive less urgency. The informational signals we might rely on to trigger legal action—the near-emptiness of a particular species bucket—are muffled by co-classified subsets that are doing well. But the species definitions may also bear on breeding initiatives designed to increase genetic diversity within the particular species or subspecies. Here, a narrow definition hurts rather than helps by reducing the number of trading opportunities.

   Similarly, a thinner category may allow for more tailored treatment (as well as more urgency around avoiding a complete emptying-out), but a broader category may be able to draw on a larger political base. Consider historic preservation efforts. Define a narrow enough category of architecture (by style and era, or perhaps even by architect as well) and we are in perpetual danger of losing "it" altogether. But the number of people who care about that narrow category may be low, and their political efficacy may be insufficient to stand up against those who want to demolish and redevelop.

   The fact that considerations pull in two directions does not mean that the result is undistorted or optimal. Dueling implications may force a compromise that is normatively undesirable if multiple goals are independently important and none of them can be well achieved as a result. My reason for emphasizing these tensions is not to suggest that they always balance each other in an appropriate manner (it would be an amazing coincidence if they did), but rather to identify a policy approach that could be consciously employed to address category costs. For example, landowners might be given some latitude to define their own property denominators for purposes of applying the *Lucas* total takings analysis, but then be held to that same denominator in other contexts where

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98   Single-subject restrictions for legislation are similar to tightly constrained trading regimes in that only certain kinds of offsetting benefits and costs can be bundled together. *See, e.g.*, Michael D. Gilbert, *Single Subject Rules and the Legislative Process*, 67 U. Pitt. L. Rev. 803 (2006).

incentives cut in the other direction—say, by allowing zoning flexibility or transferable rights to apply across an entire parcel, however defined.

Conclusion

Categories convey consequential informational signals by breaking the world into discontinuous chunks. These signals—and their consequences—differ from what would be delivered through individualized assessments, which leaves room for a great deal of strategizing around categories. Continuizing and individuating are popular strategy-proofing moves. But sometimes these forms of splitting are unavailable, undesirable, or prohibitively costly. This Article has suggested an alternative route to making categories more stable and less strategy-prone: bulking them up in ways that reduce intra-category heterogeneity in payoffs. The intuition behind this claim hinges on the offsetting effects that can be embedded in categories that are larger or more durable, or that serve more purposes. For similar reasons, bundled inclusion and exclusion decisions can prevent harmful unraveling. Recognizing these possibilities expands the policy menu by offering new ways to confront the costs of categorization. In short, sometimes lumping outperforms splitting.