

of fairness, or universalism, at the aggregate level of analysis, with important and marked abridgements of universalism at the level of individuals.

Before stating the new theoretical position and discussing empirical examples that support it, I note that even the old position acknowledged conditions under which universalistic principles had been abandoned. For instance, there are notable historical examples, and indeed periods of time, when science fell short of its ideal of universalism in its treatment of groups of aspiring scientists. We need not recount here the periods of time in which being a Jew made it difficult to obtain positions in US academic settings, or when an individual's race or gender simply excluded a youngster from training at leading graduate departments, no less faculty membership in those departments (Rossiter, 1982). While science may have permitted members of disadvantaged groups to enter its laboratories, they were generally allowed only in restricted zones, or into marginal positions (Cole, 1979). Much has changed to undermine these bold abridgements of the principles of fairness and justice and when we examined scientists' careers in the late 1960s and 1970s, we found that scientific output (i.e. numbers and quality of papers) was the strongest determinant of three forms of scientific recognition: receipt of honorific awards, recognition in the form of positions at leading science departments and peer esteem. While institutional location had some independent influence on recognition above and beyond the influence of quality and quantity of role performance, the correlations between rewards and productivity were strong. The series of empirical studies that we carried out led us to a position that the ideal was being closely approximated in science.

What this position did was to overlook the combined influence of institutional sorting and of social networks on particular decisions — decisions which had a dual set of consequences for the system and for the individual. The older view drew inferences from aggregate outcomes about individual-level processes. In this sense, it was akin to committing the "ecological fallacy", where individual relationships and the process of determining outcomes are inferred from knowledge of the aggregate level correlations. Our current position holds that science as an institution has mechanisms to sort individuals roughly in terms of their ability or their potential and after early years in the career into those who have demonstrated good or excellent research performance and those who have not. Thus, there are groups of individuals roughly sorted in terms of

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The paradox of individual particularism and institutional universalism

In 1973, Stephen Cole and I published a book entitled *Social Stratification in Science*, which examined the reward system in US academic science. That book had a principal aim: to answer the question of whether the reward system of science approximated its universalistic ideal. Was science fair in distributing its rewards, or did sex, race, age, social position and past honorific awards influence the selection of scientists for new rewards, independently of the quality of their scientific work? In that and other later work published by us, we concluded that science closely approximated its universalistic ideal; that to a large extent rewards were meted out in accord with demonstrated role performance. Furthermore, we held that where science departed from its universalistic ideal, the process of accumulation of advantage, that is, where past achievements increased the probability of future achievement through the accumulation of resources and facilities necessary for scientific productivity, accounted for the skewedness of recognition in science. Accumulative advantage did not, in principle, violate the norm of universalism if those who were accumulating the advantages were, in fact, initially more able scientists. That position now requires theoretical modification in light of subsequent empirical work that we have conducted over the past dozen years.

In this paper, I argue that the distinction was never drawn properly in the older work between universalism as it operates on an institutional level, that is, at the level of the social system of science, and particularism at the individual level of analysis. In fact, when we examine science, and in all probability other social institutions as well, what we discover is a reasonable approximation

universalistic criteria. In these initial sorts, the system applies universalistic criteria of review (e.g. admission to graduate departments, awards of graduate fellowships, etc.) and subdivides cohorts into several groups in terms of potential and achievement. Errors are made in this evaluation process as well, but the decisions are based upon a set of standards that are rational for the development of a scientific field and are applied in a universalistic fashion to all applicants. But exclusion from opportunities is not determined by such factors as sex, race, ethnicity, religion and so forth.

Particularism enters the system as a result of scarcity of resources. After the initial sort, or series of sorts, is made on a population of applicants, aspirants, job seekers, grant applicants, etc., there still remains a pool of qualified individuals which exceeds by a significant amount the number of positions, awards or grants available for distribution. Although these individuals need not be alike along a host of important dimensions, they all have legitimate claims to be part of the pool of qualified applicants or aspirants. They may do very different types of work, they may employ highly varied types of methods and theories in their work, they may work on a large or small scale, but they all have demonstrated the quality of role performance that makes them legitimate members of the pool.

Given the imbalance between numbers of qualified applicants and the number of positions, awards and grants available, the question is: on what bases do individuals, as representatives of social institutions, make decisions? To what extent are the decisions based upon network associations, friendship patterns, the strength of strong and weak ties, institutional loyalties, quid pro quos or tit for tats, authority relationships, old-boy networks, "the luck of the reviewer draw" and other forms of decision rules that represent abridgments of universalistic principles of decision-making? I argue that in a highly significant number of instances, the actual particular choice of one job applicant over another, one grant applicant over another, one candidate over another for a MacArthur prize, Nobel prize, or membership in the National Academy of Sciences, depends at least as much on particularistic criteria as universalistic ones.

And there are at least three reasons why this is apt to be so. First, from the point of view of the social system, that is, in terms of the rate or quality of scientific advance, it really does not make much difference which of the several possible choices is in fact made. The system does not suffer by the particularistic choice. The choice has the appearance of being universalistic, since the applicant actually

chosen stacks up well compared with any others that are pulled out for purposes of comparison from the pool in the top tier and compares favorably with scientists in lower tiers.

Second, the simple fact is that in some situations it may be impossible to select one applicant or aspirant over another on the basis of a universalistic principle. The principle may not have been formed or articulated. In short, there may not be a universalistic rule that will govern the selection process. Moreover, there may exist, in principle, a universalistic standard, but it may be wholly impractical to apply it — a situation often found in legal decision-making where universalistic procedures yield to administrative convenience.

If there are legitimate differences in taste, or if there simply are no known ways of distinguishing one candidate from another on rational and universalistic grounds (e.g. the multiple applicants to law school whom everyone agrees could do well, but among whom the admissions committees must make choices — *ergo*, the use of non-rational but possibly universalistic criterion such as minimal differences on the Law School Aptitude Test (LSAT), which are uncorrelated with performance in law school), then the probability of personalistic or particularistic criteria entering the decision-making process is increased (cf. Cole, 1979). Third, there is apt to be strong personal and institutional pressures placed on "gatekeepers", admissions officers and grant panel members to select from among applicants and aspirants whom they know, like or owe favors to. Universalistic criteria may be abridged in an effort to reach a variety of institutional goals, such as financial contributions from the beneficiaries of favorable decisions.

In short, the claim is that the reward system of science operates in such a fashion to produce a substantial aggregate correlation between quality and quantity of output and recognition, but that it simultaneously operates with high levels of particularism in its allocation of these forms of rewards to individuals competing for them. All of this may appear paradoxical. How can we aggregate a set of particularistic judgments into a rational and universalistic outcome for the larger social system? How do injustices that create pain and suffering for individuals result in a social system that has a high level of justice?

Such paradoxical ideas are surely not restricted to social life. Since Werner Heisenberg, as a young physicist in his twenties, proposed his ideas of discontinuity, which later led to his "uncertainty principle", the laws of physics have dealt with the most remarkable,

but similar paradox — that beneath order there is chaos. Perhaps fortunately for Heisenberg, he was able to convince Niels Bohr of the wisdom of his work, but such ideas of lower-level chaos producing higher levels of order were repugnant to most “classical physicists” and surely to Einstein himself who, in regarding the randomness at the foundation of reality implied by quantum theory, said, “I cannot believe that God plays dice”.¹ Heisenberg’s ideas, which built on a development that can be traced back to James Clerk Maxwell’s deterministic 19th-century field theory, was that random movement, even chaotic movement at the micro level of elementary particles, produced order at the macro level that was captured in general laws.²

How is the analogy drawn from physics applicable to the sociology of societal relationships? The link can be found between the idea of random process at a substructural level and order at the emergent level of analysis. The key conceptual element is in the idea of randomness, which does not have to indicate particularism. Indeed, randomness could indicate a purely universalistic, if not wholly rational, system of selection based upon a lottery-type drawing. But we argue that there is a good deal of chaos that does involve both randomness and particularism that operates at the micro level of social interaction that when aggregated results in a system that approximates a fair one. Strong elements of randomness at the substructural level of action produces interactions (involving probabilistic and interactive processes that are not well understood) that lead to order at the structural level of social systems. Furthermore, the randomness is influenced by the particular pairs that are formed by network assignments of individual aspirants and applicants to judges and gatekeepers. A central issue is then: what is the relationship between randomness, or the “luck of the reviewer draw” and particularism?

The linkage results at a substructural level from the pairings made between aspirants, applicants and alleged perpetrators and judges, jurors and gatekeepers. The pairings have substantial, but not complete, chance elements in them. We also see that this is so in the peer review process in science and in many processes involving applicants, aspirants and judges. The pairings introduce the element of concordance or discordance between the likes, dislikes, preferences, presuppositions, values and interests of aspirants and gatekeepers. If the chemistry is right between plaintiff or defendant, between applicant and panels of judges, then the probability of a favorable

outcome from the point of view of the plaintiff or aspirant increases — sometimes dramatically. If the chemistry is wrong, the probability of such a favorable outcome is reduced. In short, where the bonding involves homophily and concordance, the probability of success is greater because particularism has favored the aspirant. When the bonding involves prejudice or discordance, the probability of success goes down for the aspirant and goes up for some other competitor. The same is true for pairings for job aspirants, award seekers, grant applicants.

In short, global opportunity structures are constrained by particular pairings between aspirants and gatekeepers. Opportunities are mediated by the bonding created in the pairings. Since these bondings are partially the result of choice and partly the result of chance, there are large elements of particularism in the micro-decision outcomes. They are the result of choice in an anticipatory sense. An individual aspirant, aware of the composition of a panel of judges, peer review study section, or interview committee, decides whether or not to apply for a job, fellowship or grant. He judges that the specific pairing for him will increase or decrease the probability of success. Limited information, ignorance, error and restricted degrees of freedom (i.e. the scientist must apply for funding at a particular time to keep his laboratory going) lead individuals to enter competitions where the pairings are apt to be unfavorable. But self-selection out of competition often results from a rational choice that a good bond is not apt to be joined between applicant and judge or jury.

The crudest form of particularism, but not the only one, is found when the judges or juries camouflage decisions which are grounded in personal associations and personal biases in rational terms. But particularistic results can also be obtained when prejudicial attitudes, removed from the individual aspirant, are linked to the “school of thought” he represents, the theoretical orientation he espouses, or the personal views he holds that are divorced from his scholarship, enter the decision-making process. Each of these forms of particularism exists and they are often the inadvertent by-product of pairings of applicants and judges by gatekeepers.

Let us consider a set of examples of the paradox of concordia/discours, first drawing upon cases in point from science and then moving to the application of certain legal principles which in effect produce rules that acknowledge particularism on the individual level in order to increase chances of larger social equity.

1. Cases from the sociology of science

1.1. Peer review at federal funding agencies

For five years, Stephen Cole and I consulted for the National Academy of Sciences' Committee on Science and Public Policy (COSPUP) on a study of the operation of the peer review system at the National Science Foundation (NSF). The study had several purposes. For one, we wanted to describe how the system operated, both in terms of its formal and informal structure; for another, we wanted to see whether there was evidence of an "old boy network" operating to produce higher probabilities that eminent scientists would receive more grants than less eminent, but "equally" qualified applicants. The study was carried out in two phases and it was the experiment in the second phase which was designed to see whether program directors manipulated the results through selection of peer reviewers that led to results that have a direct bearing on the question of individual particularism and institutional universalism.

In Phase I of the study, we demonstrated that peer reviewers who were located at top ranked science departments were no more likely than those at lesser ranked departments to appraise proposals submitted from elite institutions as worthy of funding. In fact, eminent scientists were somewhat harsher in evaluating their peers than were rank and file reviewers (Cole et al., 1978). We took this to indicate that there was no evidence of "old boyism" operating at the NSF. Again, universalism predominated over particularism. That was an overly generous interpretation. We did not have data on the actual social networks of reviewers and whether, for instance, they did or did not know the person whose proposal they reviewed. Nor did we gather data on the social network of peer review panel members at the NSF and their linkages, if any, with applicants. Without those micro-level data we could not draw strong inferences about the levels of individual particularism in the peer review system.

Why was this an error? There are, of course, many more applicants to the NSF research programs than can possibly be funded. In fact, there is widespread agreement within the research community that there are many more qualified applicants to federal agencies than funds to go around. Thus, rational choices must be made among a set of applicants many of whom are eminently qualified for funding. How then are choices made?

We found this out in the Phase II experiment, which looked at 150 proposals that had been evaluated by three NSF programs in chemical dynamics, solid-state physics and economics. Of the 50 proposals selected from each program, 25 had been funded and 25 rejected. To summarize briefly a complex design and set of procedures, we attempted to simulate the same procedures followed by NSF, but with several important modifications. We selected "surrogate program directors" who read proposals and produced a list of reviewers who were qualified to evaluate the particular proposal. COSPUP reviewers, selected from these lists, were sent the same proposal and instructions that NSF reviewers had received; they were asked to evaluate the proposals on the same bases and to rate and comment on the proposals using the same five-point adjectival scale and format for descriptive appraisals. The COSPUP reviewers were told that they were participating in an experiment. We wanted to find out whether there would be a strong or weak correlation between the set of ratings by the NSF reviewers and COSPUP reviewers; how many proposals funded by the NSF reviewers would have been rejected had the decision depended on the second set of reviewers; and, how "reversals" of the NSF decision by COSPUP reviewers could be explained.

The results of the experiment showed an impressive correlation between the ratings of the two sets of reviewers, in the range of 0.6 for each program. However, it turned out that 25 to 30 per cent of the decisions made by the NSF would have been reversed had the decision depended on the second reviewer set. These reversals did not concentrate simply around the funding cutting point. For instance, 26 per cent of the proposals rated in the top quintile by NSF reviewers would not have received funds had the decision depended on COSPUP reviewers. How could we account for this proportion of reversals? We examined the verbal comments of reviewers. While we surely did not expect to find outright *ad hominem* comments, what we did find was a tremendous amount of variability in the opinions of the reviewers — opinions which covered the full gamut of dimensions of evaluation. Reviewers of the same proposals who were by all measures equally qualified to review the proposals, disagreed (often strongly) about the quality of the specific content of the proposal submitted; the quality of the applicant(s) track record; the importance of the problem being studied; the ability of the principal investigators to carry out the study; the research methods that were proposed; the budgets required to carry

out the research project or program; and the relative value of funding the particular line of research proposed rather than some other research (Cole and Cole, 1985). In short, there simply was only a limited amount of consensus among reviewers of the same proposal.³

The principal consequence of the very high level of variability in reviewer opinions was that the ultimate decision depended to an extraordinary degree upon the "luck of the reviewer draw". Given that anywhere from two to ten reviewers would referee a proposal and given the levels of disagreement, success or failure depended upon what small sample of reviewers was actually sent the proposal. The essential point is, of course, that if the number of reviewers sampled is small, then the estimate of the population's opinion of a proposal can be quite biased. Moreover, it became clear from detailed review of the comments of reviewers that the types of disagreement that we uncovered were endemic to science at the frontiers of knowledge. There was no easy solution because a "healthy science" probably involves widespread disagreement on the dimensions on which it was found. Disagreement on the important issue of assessing new work and proposed work was simply part of the structure of the scientific enterprise. At the substructural level, there are apparently high levels of randomness which result in particularistic decisions.

All of this sounds very troubling for scientists, and indeed it is.⁴ Scientists depend on funds to carry out their work; few who work in the world of large laboratories can exist without funding. So funding and its pursuit is critical to the continual productivity of scientists. There are estimates that laboratory scientists spend upwards of a quarter of their time pursuing funds.⁵ To the extent that funding seems to be based upon a strong element of "luck" and what members of a specialty sit on peer review panels, the system can be viewed as biased or particularistic. Much of the funding decision for particular individuals rides on the particular likes of peer reviewers who happen to be picked from a pool of eligible reviewers.⁶

While the system of peer review often penalizes individuals because they were not blessed with "luck", the redeeming feature of the system is that it remains totally unclear whether funding one individual rather than another makes any difference for the advancement of knowledge. It makes a critical difference for individuals, but does it make any difference for science as a whole?

Since the funding decision is made from among a group of roughly equally qualified applicants, funding decisions, which may be based upon the individual preferences or biases of reviewers, will not produce a significantly different aggregate level of quality of funded proposals. Evidence to support this claim can be found in the very low correlations found between the prior track record of applicants and the funding decisions and in studies of the citations to work produced from funded and unfunded proposals, which show rather low correlations between funding and subsequent impact of published work (Cole and Cole, 1985; Carter, 1974).

Some witnesses to these results at the National Academy of Sciences thought that a remedy might lie in the NSF adopting the National Institute of Health (NIH) system of study section panels, where ten to twenty scientists in related scientific specialties gather together to discuss and evaluate proposals. Consensus might be obtained through discourse. But this overlooks both the endemic nature of scientific disagreement at the frontiers of knowledge and the essence of the group dynamics of funding decisions made through committee. In fact, it might well be the case that the NIH system of peer review would involve greater particularism camouflaged by artificial consensus. Why is this so?

First, with the NIH system one does not avoid disagreements and individual biases, one simply allows them to be debated in committee, where forceful personalities and eminent authorities in the field may carry disproportionate weight in the evaluation process. Second, since each study section member cannot possibly read all of the proposals, they are assigned principal responsibility to report on and evaluate a handful. Nonetheless, each study section member votes on every proposal and no panelist is given any more weight in the voting than any other. Thus, reviewers vote on a majority of proposals about which they do not have first-hand, if any, knowledge. This leads, almost inevitably, to the production of evaluation by authority. Those scientists who have done their homework best, whose professional reputation produces deference, who can make the best case for "their" proposals, have a higher probability of carrying the day — subject, of course, to the various biases of others that are not subject to processes of persuasion. In short, the biases, prejudices, values and appropriate criticisms of the few become multiplied into the consensus of the many.

Third, although there is little systematic evidence that social networks influence the decision-making process one way or the other,

anecdotal reports of committee members suggest that there is a good deal of lobbying which goes on outside of the committee rooms for "favorite" proposals. Thus, the composition of the committees and the applicants' relationship to those committee members produces preference structures if not outward biases (Pfeffer et al., 1976; Pfeffer, 1982).

Of course, if we try to think about solutions to this problem we must go far beyond the current devices that shape policy. For example, the forms of particularism that enter the decision-making process in peer review for scientific papers or grant applications are not constrained substantially by the exclusion from the deliberations of panel members who are located at the same science department as the applicant. Not only are social and intellectual ties apt to extend far beyond the boundaries of departments, but to exclude from active deliberation does not exclude from participation in the informal discussions prior to deliberations that may make all the difference in the decision. We could consider the idea of a lottery to determine "winners" and "losers", but there are problems with this type of solution as well, as is discussed later. But the question of whether a lottery would lead to an equitable individual set of decisions compared with the current practice is worth discussing. The question that we have to consider when thinking of lotteries as decision-rules is not only how they affect the distribution of rewards to individuals, but how they affect both the initial sorting mechanisms and the process of self-selection of applicants and aspirants.

Plainly, several types of network analysis could begin to explain the outcomes of pairings between applicants and referees, depending, perhaps, on the type of particularism that we are encountering. For example, classic network analysis of social ties might begin to explain patterns of particularism based upon friendship, or upon the strength of strong and weak ties (Coleman et al., 1966).⁷ Structural equivalence models based upon agreed cognitive orientation, substantive ideas, theoretical perspectives, common methodologies, or common social attributes (e.g. men and women favoring people of their own sex) might explain outcomes of particular pairings. Finally, particularism based upon a somewhat different form of structural equivalence, relations to the center of power, authority, financing and the core of a discipline, might explain particularistic decision-making. For example, consider a specialty in which there exists two or three major laboratories, each of which receives large federal grants to support many scientists. They are bound to review

each other's proposals. Neither set of scientists believes that the quality of work in the other lab is particularly outstanding. They have almost complete information about what is going on in their competitor's lab. They face a "prisoner's dilemma" game with partial or full information. Each group can attempt to "knife" the other, but they also face the prospect of being "knifed" by the other should they choose to try and kill the proposals of their competitors. Despite their disdain for the work of their competitors (or at least the desire to "win the race to important discoveries"), they often will choose the "co-operative strategy" of sharing the resources — in order to ensure that they receive continued support. This is the classic *quid pro quo* strategy of particularistic decision-making among two competitive players.

In the meantime, laboratories not at the core, which are smaller in size and which exercise less influence, may find themselves without funds because of the particularistic decisions by the two major laboratories. Of course, when either large laboratory is compared with run-of-the-mill labs, each looks very good indeed. Therefore, the allocation of resources to either, or as the case will often have it, to both of the major labs is universalistic at the aggregate level of analysis.⁸

1.2 *Nobel prizes, national academies, elections to the 41st chair and other prizes*

If the combination of individual particularism and institutional universalism can be found in the peer review process, it can also be seen in the distribution of the most prestigious awards in science.

Harriet Zuckerman, in her extraordinary study of Nobel laureates in the USA (1977), explicitly discusses this duality in the selection of Nobelists:

Every year, more scientists are eligible for Nobel prizes than can win them. This means that there has always been an accumulation of "uncrowned" laureates who are the peers of prize-winners in every sense except that of having the award. These scientists, like the "immortals" who happened not to have been included among the cohorts of forty in the French Academy, may be said to occupy the "forty-first chair" in science.

Occupants of the 41st chair represent a stellar group indeed, including the likes of Josiah Willard Gibbs, Dmitri Ivanovich

Mendeleev and more recently Oswald T. Avery (Zuckerman, 1977: 42). Most pointedly, Zuckerman indicates how particularism comes into play in the final selection of Nobelists:

The question of whether universalism or particularism governs the allocation of the prizes is badly put. Each may be applied or both, first one, then the other. The model of decision making for the Nobel prize may be thought of in terms of successive phases of selection from smaller and smaller pools of candidates. In the first phase, significance of scientific contribution should take precedence in the sorting process since laureates, on the whole, are generally considered to have made major advances in their fields. Only rarely, however, does the first cut generate a small number of decisively superior contributors who stand out above the rest. (. . .) But generally, the first cut produces a cadre of candidates who on a first approximation seem pretty much of a par. Since some additional bases for selection are required if a choice is to be made, secondary criteria are called into play: some of these remain functionally relevant to the advancement of scientific knowledge but others are particularistic (p. 49).

These particularistic criteria have included "a candidate's nationality, politics, or even their affability, recitude, or the fitness of their domestic life" (p. 49). But the ultimate selection of one candidate rather than another may also be based upon particular strong preferences of committee members, likes and dislikes and interests of members of the selection committees. For the order in the social system of science, the critical question is whether the initial winnowing is based upon universalistic grounds. But we cannot overlook the consequences of particularistic final judgements on the fads, fashions and research choices and styles that result from the importance attached to the prize.

Once selected, a Nobel prize-winner's influence on the future development of his field can be great. That effect can multiply well beyond what it would have been without the award. Thus, when particularism is employed in the final phase of selection, it will make a great difference for the individuals selected or not, as well as for the cognitive development of a research area. In the upper tier of sciences covered by the Nobel prize, it is well known that competition for the prize is a strong motivator in the research enterprise and not to have been selected when one clearly is in the pool of eligibles is not taken lightly by those who are passed over.

Election to various national academies of sciences in the USA involves an even clearer example of the dual process of individual particularism and institutional universalism. Consider first the interesting history of the election of women to the National

Academy of Sciences. Until the election of Florence Sabin in 1925, no woman had been elected to the nation's most prestigious scientific organization. Even by 1944, when Barbara McClintock was elected, only one other woman had been honored with election (Margaret Washburn in 1931). In short, until relatively recently, women were either not placed in the pool of "eligibles" for the Academy, or were never deemed worthy of election. Although women represented a small fraction of all American scientists who held PhDs, there is at least a *prima facie* case that gross particularism operated in election to the Academy.

The story in Florence Sabin's election to the National Academy is told by Margaret Rossiter and the details suggest the dual process of particularism within the structure of larger universalistic outcomes. Rossiter notes that after Sabin was initially rejected for membership in the Academy in 1923 a campaign was launched to have the recent President of the American Association of Anatomists elected:

Sabin was renominated for the academy and won, though not without a battle. Edwin Conklin of Princeton attended a part of the election meeting and as he described the situation to his friend Ross Harrison at Yale, one needed strong political friends as well as scientific accomplishments to be elected to the National Academy. (. . .) In general, the choice of these three women [Sabin, Washburn and McClintock] from the many who might have been considered eligible tells more about the men in these groups and their attitudes and politics than it does about the women elected, whose work was outstanding but hardly any more so (to judge from their professional obituaries) than that of the many others not chosen: Ruth Benedict, Mary Swartz Rose, Annie Jump Cannon, Edith Patch, Margaret Ferguson. (. . .) The key difference for some women seems to have been less in their work and more in the men around them, who had to be both politically powerful and sufficiently convinced of their merit to be able to overcome others' reluctance to have them elected. It was not enough for the men to be mildly impressed with their work; they had to be willing to fight hard on the women's behalf (Rossiter, 1982: 286-7).

But perhaps more interesting for our purposes is what happened when the gates to the Academy were opened, at least enough for a larger number of women to be elected. Once women entered the pool of eligibles, who dominated the group of those who were elected? Some, like McClintock, had never married; but an extraordinary proportion of the first wave of women were wives of male members of the Academy. Could it be that simply by chance the proportion of the "best women scientists" who became eligible just happened to be wives of Academy members? This seems highly

improbable. It was more likely to have resulted from a combination of universalism and particularism. While the women who were elected probably fell within the range of excellence in the pool, their particular selection may have resulted from their visibility through social interaction with the male Academy members who were voting on their nominations. Indeed, their nomination rather than others not married to Academy members is apt to have been a greater than random probability. Their election, which is often a function of effort by the sponsors, was probably affected by the position of their spouse.

Election to the Academy is apt to involve other forms of particularistic behavior. Since Academy members elect new members, there is apt to be a built-in particularistic bent that results from the greater familiarity among members of the same science department or government laboratories. Interest in having one's colleagues elected, coupled with better information that one has about one's colleagues, is apt to result in the election of members of the same universities and science departments that are already strongly represented in the current Academy membership. But if Harvard faculty members find their colleagues somewhat more "clubbable" than those in other universities, it is not apt to lead to an overall lowering of the quality of members in the Academy. When compared with the work produced by others in the pool who are not located at Harvard, the scientists elected from Harvard undoubtedly have, on average, "track records" as good as those from alternative departments. But to say that, *ceteris paribus*, the Harvard and University of Illinois scientist has equal probabilities of election to the Academy would probably distort reality.

What holds for selection of Nobel prize-winners and election to the National Academy is equally so for candidates seeking less honorific forms of recognition. Again, the critical issue for the advancement of knowledge is the way the initial sorting is carried out, but at the secondary stages of selection, the pairings of applicants and gatekeepers is critical. Whether the prize is of international stature or for the best book on social policy produced by a sociologist in 1987, at the micro level the bonds between the applicant and the judges become critical in the actual selections made. And the choices resulting from these pairings are often based upon particularistic grounds.

2. Cases from the sociology of law

2.1 *Affirmative action: group vs. individual justice*

Much of the recent debate over affirmative action policy implicitly deals with the relationship between macro-level justice weighed against individual particularism. The conceptual overlap between my theme and process vs. outcome orientated theories of justice is substantial. Advocates for group justice, such as Owen Fiss of the Yale Law School, argue that the benchmark for a universalistic system is the proportional representation of the population, not only among aspirants to positions, but in the outcomes of the decisions (Fiss, 1977). This represents a decided shift in the legal definition of particularism and universalism. The level of universalism in the process is defined in terms of the outcomes that flow from those processes. The *a fortiori* argument is made that disproportionately low representations of minorities in occupational positions and in other reward categories imply that universalistic criteria of selection had not been operating. Thus the measure of the system lies in the outcome. This turns on its head traditional equal protection analysis and its focus on the protection of individual opportunities.

The redistributive goals of this group justice perspective is made explicit by Fiss and others. Since minority group members are a relatively powerless group, without sufficient political and social power to protect their own interests, maintaining an individual justice theory of equal protection will lead to a perpetuation of current social hierarchies.⁹ This is so because higher proportions of blacks and other minorities cannot make it through the initial sorts that would place them in the pool of eligibles for significant societal rewards. Lacking the power to define the criteria of judgment and who will make up the committee of gatekeepers for jobs, awards and other forms of societal recognition, minority group members will be faced continually with "bad bonding" between themselves and the gatekeepers. Thus, the probability of "success" is low for racial minorities.

Furthermore, given the historical lack of opportunities for recognition and achievement by minorities, traditional gatekeepers can appear to use universalistic criteria of selection to continue their exclusion of blacks and other minorities from positions of prestige and recognition. For example, the extensive use of standardized testing, e.g. civil service examinations, as mechanisms for making

initial sorts within the population into pools of eligibles and ineligibles, is based upon questionable assumptions, it is claimed. The test results are said to be uncorrelated with actual job performance and often even with performance within training programs for jobs. Thus, using them as a basis and justification of first approximations of "quality" becomes a highly questionable form of "universalism". If this is the case, then the most logical way to "bypass" the problems of the initial sorting of applicants and aspirants into different "quality groupings" is to define universalism in terms of outcome rather than process.

But even more importantly, advocates of affirmative action involving the equivalent number of quotas suggest that particularism at the subsystem level is acceptable so long as the end-product is more universalistic — that is, involves a more equitable distribution of racial groups in the rewards meted out by society.¹⁰ In fact, Fiss has argued that it should not concern us whether or not the beneficiaries of affirmative action are individuals who have experienced discrimination. And it should not concern us overly that some individuals from the majority racial group, who have superior records to beneficiaries of the plans, have their life chances abridged because of the particularism involved in selecting minorities.

Regardless of one's position on affirmative action, it is this relationship between the appearance of endorsing individual particularism (i.e. not everyone has an equal chance at recognition, but some have greater chances than others based upon race, ethnicity, sex, etc.) over universalistic criteria of judgment that has created so much heat and such notable recent legal cases as *Bakke*, *Weber*, *Fullilove* and *Local No. 98, International Association of Firefighters v. City of Cleveland*.

The critical point is, however, that advocates of racial quotas are arguing that particularism at the individual level has always existed. The emperor simply wore different clothes and was camouflaged in apparently "universalistic rules" that did not, in fact, operate to produce universalistic outcomes. The rules were designed and worked at the service of the existing "haves" and operated to continue to exclude the "have nots". Now the advocates of group justice are simply saying that "particularistic criteria" will continue to rule, but the nature of that particularism can be altered so that there will be greater societal equality, that is, a higher level of societal universalism.

Of course, evaluations of these standards of equity will boil down, to some extent, to definitions of what constitutes universalistic rules. If performance criteria are made paramount — that is, that individuals should be rewarded in direct proportion to their demonstrated role performance, without regard to any other criteria — then group justice principles will have little appeal. However, if performance in itself is neither the sole nor principal criterion for determining universalism, then group justice principles of societal universalism follow easily.

Consider contrasting examples. I have worked with the individual role performance standard, defining any deviations from rewards for quality of performance as indicating particularism. Thus, ideally, the quality of scientific papers would explain all of the variance on forms of recognition for research performance. Of course, it never does for a variety of reasons, including matters of self-selection rather than discrimination or particularism. But is this an old-fashioned, outmoded angle of vision? In Norway and other European societies, for example, academics who have achieved the rank of full professor receive only the basic salary, regardless of age, seniority and most significantly, the quality of their research output. While I would define that as evidence of particularism, quite the contrary is the case among the Norwegians with whom I have discussed this matter. They feel that it is quite "just" to have zero differentiation within rank, even while acknowledging that there is wide variability in performance. Their argument emphasizes the intrinsic rewards of high-quality performance and the prestige gained from it. Plainly, definitions of "fairness" and "justice" will be critical in evaluations of universalism at the institutional or societal level.

2.2 The application of capital punishment rules

Since *Furman v. Georgia*, the Supreme Court has considered a series of capital punishment cases addressing, *inter alia*, the following key questions: is capital punishment discriminatory against racial minorities; does it have a marginal deterrent effect over alternative forms of punishment; and is it arbitrarily imposed? Much of the capital punishment legislation following *Furman* was designed to produce a methodology that would reduce the probabilities of discrimination and arbitrary sentencing. Elaborate sets of criteria of

what is to be defined as "aggravating" or "mitigating" circumstances have been developed by state legislatures to ensure "universalism".¹¹

Abolitionists have argued that capital punishment sentences continue to be arbitrary and that they have produced documents to demonstrate that cases of like severity and with apparently equally strong aggravating or mitigating circumstances, have resulted in wholly different sentences. In short, the abolitionists argue that in practice, capital punishment involves the application of particularism to individuals despite the *prima facie* use of universalistic standards of judgment.

The Court's response to this argument speaks to our central issue. The majority of the Court has argued that individual cases of particularistic judgments, or non-equivalence of like outcomes for like cases, is irrelevant if the basic rules for fairness are followed throughout the trial and appeals process (quote from Court opinions). Justice Rhenquist has argued that the measure of the constitutionality of a capital punishment statute is not whether all like cases are, in fact, treated alike, but what the overall outcomes are and whether it fulfills larger social goals articulated by state legislators (quote from Rhenquist opinions).¹²

The argument for arbitrariness of capital punishment is also related to our general theme because it is concerned with the particular bonding or pairings that are made between defendants and jurors, or more generally, between applicants and gatekeepers. In different social contexts, the pairings between the defendant and jury, particularly in terms of racial pairings, are argued to make a difference in the outcome of the cases. Furthermore, the pairings of defendant and jury conditioned upon the racial match between the murder victim and defendant are argued to influence the disposition of the case.

In sum, the Court seems to be arguing that particularistic outcomes, which are apparently random, are acceptable prices to pay within a larger system that appears to apply general universalistic principles to the decision-making process. Moreover, since the universalistic criteria do provide a basis for the first fundamental sorting of types of criminal behavior, the pool of eligibles for capital punishment is such that when compared with non-members of the pool there would turn out to be a significant correlation between the "severity" of the offense and the type of sentence. The best example of this is seen, of course, in *Coker v. Georgia* (433 US 587) in which

the Supreme Court held that regardless of the severity of the crime, a Georgia statute permitting capital punishment for rape was unconstitutional. Thus, only murders committed (and in some states only against certain specified types of people) under certain conditions make the murderer eligible to enter the "pool" considered for capital punishment. The Gilbert and Sullivan ideal that "the punishment fit the crime" is approximated, even if, in fact, the cases provide many specific examples of evident arbitrariness.

2.3 Jury selection and "scientific jury selection"

The fundamental principles of jury selection in the USA provide another illustration of institutionalized universalism and individual particularism. Indeed, in the development of "scientific jury selection" procedures we see a systematic effort to increase rather than decrease individual particularism on the part of lawyers involved in litigation. Let me elaborate this claim.

A substantial case law exists that deals with efforts to make the jury selection process less capricious, more universalistic and less prone to particularism. In the past two decades, scores of cases have focused on the sex, race and ethnic composition of juries that establish whether or not a defendant has an opportunity for a fair trial. Exclusion of blacks and other minorities from the pool of eligible jurors and other flagrant abuses of principles of universalism have been found unconstitutional. Cases on the size of jury panels and the bias of judgments have been decided. These cases have attempted to set ground rules for obtaining the highest probability of unbiased, universalistic judgments.

But at the level of individual cases, the Court acknowledges that particularism can result and that such abridgements of universalism must be tolerated in the system. For example, the Court holds that blacks and other minorities must be eligible jurors, but it does not insist that the actual composition of any particular jury be made up of proportions reflecting the racial proportions in the pool. Such fine-tuning, which can make all the difference in the individual case, is left to age-old processes of "voir dire" and peremptory challenges. These specific procedures are designed to allow lawyers to exclude jurors perceived to be biased toward plaintiffs or defendants.¹³ If the process does not operate well and there are surely no guarantees that it will, then particularism can easily result from the

pairings between the jury and the plaintiff or defendant.

With the development of scientific jury selection techniques borrowed from the social sciences, we see overt attempts by lawyers to increase levels of particularism in the pairing process.¹⁴ There is implicit here an idea that particularism often influences judgments in cases at trial. Indeed, the fundamental object of scientific jury selection is to develop profiles of prospective jurors that tap into values, beliefs, prejudices and presuppositions that are strongly correlated with a favorable attitude towards a client's position in the particular case. It allows for a "universalistic" first approximation in accepting the eligibility of virtually all social types in the community into the pool of eligible jurors and then tries to manipulate the structure of the specific jury along lines of predispositions and biases favorable to the specific client. In short, it attempts to use systematic data collection methods to increase the probability of a good bonding between a client's position and members of the specific jury hearing the case. How well the process works is less important than to understand its basic goal, which is to increase particularism at the individual case level.¹⁵

3. The problem of the first cut

Throughout, I have emphasized the importance of the initial sorting process, or "the first cut" for aggregate-level universalism. If the initial sort is not based upon universalistic principles, the level of equity at the system level is not apt to be high, regardless of the structure of decision-making at subsequent stages. Although initial sorts provide evidence of universalism, it does not mean that it must be so: "ought", does not imply "is". Indeed, a central issue becomes the question: under what conditions are the first sorts of individuals based upon equitable or biased rules? What indicators are available to identify biased or fair principles of initial sorting? Plainly, it is not sufficient to identify decision rules that have the appearance of universalism, which in fact do not operate to sort individuals or groups in an equitable fashion. We must look for principles or conditions that operate as a general universalistic rule in principle and practice.

We may begin to outline some of these conditions. Perhaps the most important factor will be the cultural and social definitions of "competence" of people with certain traits. These traits have

traditionally been immutable characteristics, such as race, sex or age. To the extent that racial or sex groups are defined as differentiated in terms of competence to perform certain roles, there is apt to be substantial bias in the initial sorting principles. If women are defined as less able to carry out the work of scientists, as lacking the basic characteristics needed to conduct quality research and to produce other forms of creativity, then it should surprise no-one that rules will be developed to exclude them from those enterprises. One need only read the 19th-century works of otherwise distinguished social scientists, such as Comte, Spencer, Durkheim, Le Bon, Moebius or Freud, to see clear expressions of female inferiority in matters of the mind. And one does not have to dip into esoterica to find similar expressions of female limitations among eminent 20th-century scientists. To the extent that such feelings are expressed openly, they may influence the development of initial sorting principles; if they remain latent they may surface under different tags during subsequent stages of decision-making.

In fact, most classificatory schemes in the law have the character of over-inclusion through initial sorts based upon immutable traits. For one example, if young adults are viewed as greater driving risks than others, we can expect age classifications for obtaining alcoholic beverages. This initial sort is plainly over-inclusive, since there are many teenagers who are more responsible about drinking and driving than older people. The sort is based upon an actual or supposed statistical correlation. Interest politics and power represents another set of forces that will determine the equity of the initial sorts. This operates not only at the societal level, but within subsystems, such as science. Interests in furthering a particular school of thought that dominates a field can easily lead to definitions of ability and competence in the first sorting processes. Those who are mavericks are sorted out, those with views more consistent with the currently powerful cognitive styles of the times are defined as "illustrating" more ability. Perhaps the extraordinary thing about scientific life is the extent to which the mavericks and young turks manage to take over specialties and fields. If interest group-style politics influence the definitions of initial competence, it is remarkable how often they fail to preserve their own interests. This suggests that there must be more than just politics influencing these definitions.

Science as an institution would seem to support the ideal of universalism, that is, of rewarding individual achievements regardless of the social characteristics of the achievers. That is the ideal, but

flagrant abuses of this norm are well established — most notably, of course, in Nazi Germany. But what operates to maintain a universalistic principle of initial sorting? Is it the perception that science could not develop as rapidly without the operation of universalism? There is clear evidence that the norm of universalism is an accepted one among scientists and methods of sorting students at the point of admission to graduate school and the PhD would appear, at least in principle, to represent practical implementation of these principles. The evidence from our past research suggests that the initial sorting is guided to a significant degree by these universalistic principles.

Scarcity of resources may also influence the development of rules to guide the initial sorting of individuals into groups of aspirants and applicants. Where resources are particularly scarce, there is apt to be great competition for the limited resources and a greater tendency to invoke particularistic criteria for recognition. But this is conjecture. It remains for empirical inquiry to establish whether there is a greater probability of bias in initial sorting in societies with greater or more limited resources.

Finally, if initial sorting is based upon universalistic principles, why not produce lottery-type decision-rules as a method of preventing particularistic judgments during the second phase of decision-making? There are several reasons why lotteries do not offer an acceptable answer to the problem of particularism. For one, an announcement of lotteries as a means of allocating rewards is often self-defeating — it undermines the processes of self-selection that operate in the initial phase of sorting. Many individuals who would not consider themselves qualified for jobs, grants or awards, would apply nonetheless because of the "chance" to be selected. Second, lotteries overlook the fact that a substantial portion of the second-level decisions are not based upon particularistic criteria. To demonstrate that there is substantial particularism in the individual decisions made about applicants and aspirants does not mean that particularism predominates or that a high proportion of decisions are not, in fact, based upon both universalistic and rational criteria. Furthermore, there is something intrinsically unappealing about basing fundamental decisions about rewards and recognition on lotteries. The task then is to find mechanisms to reduce the level of particularism after the initial sorts are made. Given the nature of taste and individual preferences and biases, that is no small task.

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Notes

1. Niels Bohr had quite a different view, when he noted: "It is wrong to think that the task of physics is to find out how Nature is. Physics concerns what we can say about Nature".
2. For a lucid discussion of the emergence of quantum theory in modern physics, see Pagels (1982).
3. The levels of disagreement turned out to be as large in the physical sciences as in the social sciences.
4. Evidence abounds for this in personal statements by scientists and in the continual call for reviewing peer review systems. See Cole and Cole (1985).
5. For discussion of this point see quotation from Arthur Pardee in Cole and Cole (1985).
6. An ironic aspect of the particularism involved in the "luck of the reviewer draw" is that it has, for some scientists, a salutary psychological effect. More than one scientist has said in interviews with us that they take some solace in the knowledge that the system may lead to particularism and that the verdict need not be taken as a measure of the quality of their science or of their potential. Biases that may result from randomness are more psychologically acceptable to some than perception that the results are totally without bias.
7. See Granovetter (1974) for the strength of weak ties.
8. For discussions of "Prisoner Dilemma" games involving varying levels of information among participants, see Luce and Raiffa (1958), Sen (1970), Parfit (1984) and Harsanyi (1977).
9. The *Carolee Products* case provides for one set of conditions under which social groups need judicial protection and heightened scrutiny.
10. Of course, it is plain that advocates of group justice believe that race must be taken into account in the judgment about jobs, contracts, admissions to schools, promotions, etc.. The irony here is simply the inversion of principles of particularistic judgments. Until these arguments were made, the use of race as a selection criterion was, of course, the hallmark of bias, prejudice and particularism. In *Kahn vs. Shevin* 416 US 351 (1974) the majority of the Supreme Court upheld a Florida statute that granted widows, but not widowers, an annual property tax exemption of \$500. While Justice Douglas acknowledges that there will be cases of widows who are less needy than widowers, he accepts the aggregate correlation between need and gender as a basis for preferential treatment. In short, individual particularism is based upon the larger collective good arising from the classification.
11. See, for example, the bifurcated system developed in *Gregg v. Georgia* (1976).
12. Of course, one of the standard definitions of "discrimination", or particularism, is the treatment of like cases in different ways. It should be noted here that evidence of particularism for the Court would include racial bias. Here the disposition of similar cases in different ways simply means that crimes of equal severity often have totally different punishments.
13. There are many grounds for exclusion from a jury panel, all of which are

designed to reduce probabilities of particularism. Among those which arise frequently are instances where a prospective juror has an action pending against one of the parties to the instant suit: where a potential juror occupies a status, such as doctor, in a case involving doctors: where a juror is related to a person whose occupation is the same as one of the parties to the suit. But social attitudes are not grounds for exclusion from a jury panel, which is the focus of scientific jury selection. Indeed, the question of whether a particular set of attitudes is sufficient for exclusion for cause from jury deliberation has been addressed in recent capital punishment decisions. The Court has found that people who have favorable attitudes towards capital punishment cannot be excluded for cause.

14. For those unfamiliar with scientific jury selection techniques, they essentially use attitude surveys to develop profiles of jurors who are more or less apt to "favor" the position of a client. These attitudes may be correlated with key elements in a case, but they may also tap into biases, presuppositions and values that would predispose a juror to a particular type of defendant or plaintiff. These profiles are then used by lawyers in "voir dire" to help select a set of jurors.

15. The analytic situation of approximate universalism determined by the first-order selection criteria coupled with high levels of individual particularism at the subsystem level can be found in many medical situations as well. To cite one example that calls forth a plethora of ethical problems involves the selection of recipients of organ transplants. It would not surprise us to find that the first sort on who should receive an organ transplant is determined by the severity of the medical condition of the pool of possible recipients. After that initial cut, a host of particularistic judgments come into play, such as the relative "value" of saving one life rather than another, the particular relationship of the doctors to the patient and the doctor's power within the medical establishment at which the transplant takes place. Thus, the answer to the question of who gets the heart or liver has a bifurcated answer: it is the person who has a severe heart or liver condition who also has important bondings to key gatekeepers in the medical community. These bonds may be direct or indirect, influenced by a variety of structural and network factors that link the patient to the decision-makers.

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