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Two Apparent Conundrums and How We
Might Address Them**

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Abstract

In situations where an adverse social outcome affects disadvantaged and advantaged groups in society differently, the rates at which those groups experience favorable or adverse outcomes tend to be systematically related to the overall prevalence of the outcome. Specifically, as the overall prevalence of that outcome reduces (e.g. as a result of a policy measure or social improvement), the adverse outcome may be found to reduce proportionately less among the group with the higher baseline rate (call it the “disadvantaged” group), while concomitantly the rate of escaping the unfavorable outcome rises proportionately less in the other (“advantaged”) group. The propensity for this to happen was first noticed by James P. Scanlan, and is sometimes referred to as ‘Scanlan’s Rule’. The Rule might be seen as calling into question standard measurement devices for characterizing groups as being relatively disadvantaged or advantaged, and as suggesting that a concern for group inequality could stymie the possibility of social progress. This paper seeks to address these questions, and in so doing suggests that Scanlan’s Rule and its widespread occurrence across a number of social situations deserve to be acknowledged. However, it also suggests that the disturbing implications of the Rule alluded to earlier are probably unfounded, and that the Rule only bolsters the case for affirmative action in a variety of instances of group inequality.

Keywords: *Groups, Favourable outcomes, Adverse outcomes, Scanlan’s Rule, Equity, Efficiency, Reverse discrimination*

JEL Codes: *D63, I13, I31, I32*

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Racial and ethnic disparities are found in many sectors of American life. African Americans, Hispanics, American Indians, and Pacific Islanders, and some Asian-American subgroups are disproportionately represented in the lower socioeconomic ranks, in lower quality schools, and in poorer-paying jobs. These disparities can be traced to many factors, including historic patterns of legalized segregation and discrimination. ... Much of American social and economic life remains ordered by race and ethnicity, with minorities disadvantaged relative to whites.

Institute of Medicine (2003; p.6). Unequal treatment: Confronting racial and ethnic disparities in healthcare. Washington, D.C.: National Academies Press, pp. xvi + 754.
Retrievable from
<http://www.nap.edu/catalog/10260.html>.

The controversies about affirmative action programs in India and in the United States suggest the difficulties of using historic wrongs as a basis for distributing reparative entitlements ... If our efforts to remedy old wrongs are inevitably selective, incomplete, and flawed - and much the same can be said about righting fresh wrongs - should they be abandoned? In toting up the costs and benefits, we should be careful not to ignore the human value in these sometimes quixotic, often ineffectual, always incomplete efforts to secure justice. As flawed as these efforts are, unreflecting acquiescence in past injustice is worse. A patched and leaky vase may be less desirable than an unbroken vase, but it is better than a pile of shards. When it comes to justice, we don't have the choice of the unbroken vase. A patched and blemished world is the only one we can attain. The effort to do justice may inspire or teach or multiply or just keep us from giving up on the possibility.

Marc Galanter (2002; pp. 123, 124): 'Righting Old Wrongs'. In: M. Minow (ed.; introduced and with commentaries edited by N. L. Rosenblum): Breaking the Cycles of Hatred: Memory, Law, and Repair: 107-131. Princeton University Press: Princeton and Oxford. Retrievable from
<http://marcgalanter.net/Documents/rightingoldwrongs.pdf>.

INTRODUCTION

In situations where an adverse social outcome affects disadvantaged and advantaged groups in society differently, the rates at which those groups experience favorable or adverse outcomes tend to be systematically related to the overall prevalence of the outcome. Specifically, as the overall prevalence of that outcome reduces (e.g. as a result of a policy measure or social improvement), the adverse outcome may be found to reduce proportionately *less* among the group with the higher baseline rate (call it the “disadvantaged” group), while concomitantly the rate of escaping the unfavorable outcome rises proportionately less in the other (“advantaged”) group. The propensity for this to happen was first noticed by James P. Scanlan (see Scanlan, 2006), and it is sometimes referred to as ‘Scanlan’s Rule’¹, or ‘Heuristic Rule *X*’ (or simply *HRX*).

In Lambert and Subramanian (2014), it is demonstrated analytically that this phenomenon will inevitably arise in any context in which disadvantaged and advantaged subgroup well-being distributions are related by a particular dominance condition. We pursue our earlier discussion of the issue further here. Consider two demographic groups *D* and *A* respectively (derived from a partitioning of the population by, say, race or caste or gender), and consider the distribution of some specific wellbeing attribute, say income, amongst the two groups. Under what circumstances might we be able to say that one of the groups – say group *D* – is unambiguously disadvantaged – vis-à-vis the other group, *A*, which may be pronounced to be unambiguously advantaged? In the work cited earlier, Lambert and Subramanian discuss a number of equivalent sufficient conditions under which such a characterization of the groups would be valid. One of these conditions, which will be of relevance to our discussion in the present paper, is outlined below.

¹ See the Scanlan’s Rule page of www.jpscanlan.com

For specificity, consider a wellbeing variable such as income, designated by y . Suppose the population is partitioned into two groups D and A (say on the basis of race, such that D is the black population and A the white population). Let $f_D(y)$ be the income frequency density function for group D , that is to say, the proportion of the black population at each income level y . One can, analogously, define the frequency density function for the white population, $f_A(y)$. Lambert and Subramanian (2014) point out that a sufficient condition under which Group D may be said to be unambiguously disadvantaged vis-à-vis group A is the following: that $\frac{f_D(y)}{f_A(y)}$ be a decreasing function of y over the

union of the supports of the two distributions. This condition says that there is a greater likelihood of relatively low y -values being found among the members of group D than among the members of group A , or that people with relatively high y -values are 'thinner on the ground' in group D than in group A . Under these circumstances, and given these properties, one supposes it would be appropriate to certify group D as being unambiguously disadvantaged vis-à-vis group A . Figure 1 furnishes a convenient visual representation of the condition we have just discussed, in terms of what we call a 'disparity curve' $\chi\chi$, which is just the plot of the ratio of the two groups' frequency density functions against income.

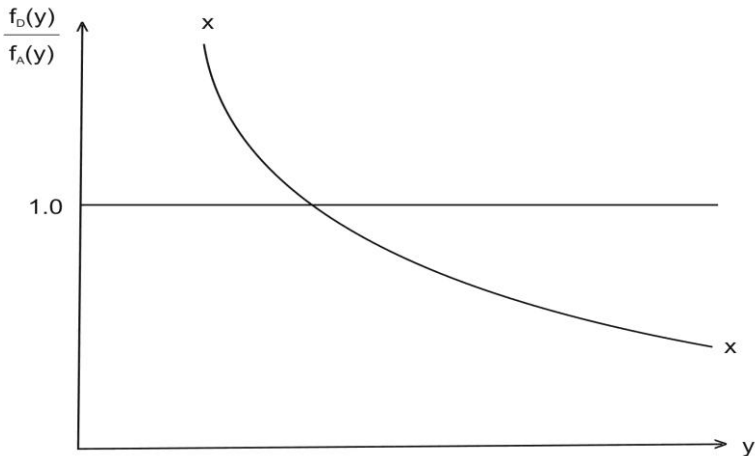


Figure 1: A Disparity Curve

There are two potential conundrums which arise from such a characterization of inter-group disparities in socio-economic outcomes. The characterization, to recall, is a sufficient condition for verifying the existence of Scanlan's Rule. The first conundrum is what we shall call 'The Dilemma of Opposing Inferences (DOI)'. This conundrum resides in the fact that in any and all such cases as are described by a disparity curve of the type featured in Figure 1, analysts will draw diametrically opposed conclusions about the efficacy of social change by focusing on adverse and on favourable outcome rates. Comparisons made in terms of the adverse outcome will indicate that disparities are increasing, whilst comparisons made in terms of the favourable outcome will provide the opposite conclusion. Could this lead to the judgement that these disparity measures are unsuited to their intended purpose?

The second conundrum is what we might call 'The Dilemma of Social Progress (DOSP)'. The conundrum resides in the fact that even policy measures that would on the face of it seem especially beneficial to disadvantaged groups are vulnerable to the criticism that they do not go

towards the elimination of inter-group disparity. The Scanlan's Rule phenomenon suggests that the rate ratio is an unsatisfactory measure of association between groups, with potential implications for many issues. This pattern is inherent in underlying distributions of well-being across groups, and is not widely recognized among statisticians, economists, policymakers and commentators. If we should regard it as a virtue to realize a diminution in the gap between the rate of occurrence of an undesired outcome for a disadvantaged group and its rate of occurrence for an advantaged group, are we also setting our faces against overall collective progress, since, after all, the rarer an adverse outcome, the relatively more concentrated it will become among the disadvantaged in all such cases in which Scanlan's Rule prevails? In view of this, would it be fair to conclude that a concern with inter-group disparity carries with it the danger of stultifying the possibility of any social progress?

We attempt, in this paper, to build on our earlier work (Lambert and Subramanian 2014), by, first, providing an essentially positive, or descriptive, account of a number of social environments where Scanlan's Rule may be operating. We then focus on the normative questions thrown up by the two conundrums associated with Scanlan's Rule discussed above, and present some views on how these conundrums might be addressed. Our overall position on the positive and normative issues involved may be summed up as follows. It would be folly to deny, or even disregard, the prevalence of Scanlan's Rule in a number of contexts of social interest and relevance to researchers engaged in studying various aspects of wellbeing and its group distribution. Having said this, the seemingly plausible conundrums thrown up by Scanlan's Rule will be judged to be more apparent than substantive. The problem, in other words, is not with Scanlan's Rule, but with how we choose to respond to it. The response in turn, as we shall see, will revolve around the issues of a proper delimitation of the questions we set out to examine, and the clarity and deliberateness with which we identify our relative emphases on the social virtues of equity and efficiency. We seek

to amplify these issues in what follows. But first, a general review of some domains of application of Scanlan's Rule.

SCANLAN'S RULE IN ALTERNATIVE SOCIAL CONTEXTS

Environmental Gradients

Lower socio-economic groups typically find themselves exposed to a greater range and intensity of environmental burdens. This causes a pronounced social gradient in environmental disadvantage, raising concerns about equity and the built environment, and surely impacting upon health inequality. Those who live next to 'environmental benefits', such as good quality green spaces, better air and less noise, are generally healthier than those who live in the vicinity of polluting factories, major roads or railway lines, with related noise and air pollution. The Marmot Review highlights the disproportionate impact of environmental burdens on disadvantaged groups in the UK (see Geddes et al, 2011); these groups suffer poor housing, higher rates of crime, poorer air quality, lack of green spaces and places for children to play, and more risks to safety from traffic as well as from the negative effects of climate change².

Some key areas, identified in the Marmot Review, where socio-economic status correlates with environmental disadvantage in the UK are these. In matters of transport, cycling brings health improvements. Good quality green space affects both physical health (decreased blood pressure and cholesterol) and mental health and well-being (the ability to face problems, reduced stress levels, social contact and integration). Pollution is worse in poorer areas, which, on average, experience higher prevalence of cardio-respiratory and other diseases, as well as of

² In the least deprived areas in the UK, over 70% of the population experience no unfavourable environmental conditions, whilst in the most deprived areas, approximately 45% of the population experience 2 or more unfavourable conditions.

congenital abnormalities³. Noise pollution adds to the environmental burden, with adverse effects on mental health, increased stress levels and reduced educational outcomes in children. There is a social gradient in obesity levels. Social housing is related to disadvantage: since the 1970s there have been clear negative outcomes associated with living in social housing for both men and women⁴. Social networks and community participation act as protective factors against cognitive decline and dementia for those over 65. Social isolation can be associated with stress, depression and premature death (see Geddes et al. 2011, pp. 9-15).

The Review's findings on the relationship between the built environment and health inequalities provide insights for the sort of interventions, developments and regeneration projects which can be used in the UK to modify (flatten) the gradient in environmental disadvantage. Targeted interventions can be designed specifically to impact on one or more aspects of the gradient, and, even if successful, would be unlikely to eliminate the gradient as a whole (some universal interventions have done this, consider for example the London Congestion Charge).

For a similar, but very much more detailed (and also more dated) catalogue of environmental disadvantages to be found in the USA, see Evans and Kantrowitz (2002), who hypothesize that it is the accumulation of exposure to multiple, suboptimal physical conditions rather than any singular environmental exposure that will provide a fruitful explanation for the social gradient (page 304). The social gradient approach to equity in the U.S. context is also discussed in Adler (2008, pp. 1-10, and 2012,

³ The impact of black smoke (i.e. particulate air pollution) on respiratory mortality in the UK appears to be stronger among people living in more deprived areas. 66% of carcinogenic chemicals emitted into the air in the UK are released in the 10% most deprived wards.

⁴ These outcomes have, perhaps ironically, increased with the growth of owner occupation. The negative effect is not caused by social housing per se, but by its relative status in the housing market.

pp. 141-145). Adler considers the extent to which racial minorities are disproportionately exposed to pollutants or other health and safety risks in the USA, citing Executive Order Number 12898 (1994, section 1-101), which instructs U.S. administrative agencies "to make achieving environmental justice part of its mission by identifying and addressing ... disproportionately high and adverse human health or environmental effects of its programs, policies and activities on minority populations and low income populations".

On a local scale, the Environmental Justice Movement has had significant influence in the USA, including shutting down major incinerators and landfills in Los Angeles and Chicago; preventing polluting operations (such as the chemical plant proposed by Shintech Corporation in Louisiana) from being built or expanded; making improvements and abatements at existing sites (such as the North River Sewage Treatment plant in Harlem, or as a result of good neighbor agreements between community members and polluting facilities, such as that between residents of Crockett, California, and Unocal); and securing relocations and/or buyouts for residents in polluted areas (which occurred at Love Canal, New York; Times Beach, Missouri; and Norco, Louisiana). (See Brulle and Pellow (2006) for further discussion.)

Needless to say, Scanlan's Rule could well apply in any or all of the environmental justice contexts we have considered here, and might be seen – in a plausible initial reaction – as being conducive to thwarting policy directives.

Poverty and Deprivation

Presented below are three tables (1, 2 and 3), extracted from Tables 1, 3 and 6 respectively of Majumdar and Subramanian (2001), which point in the direction of a version of Scanlan's Rule being discernible in the behaviour of selected social indicators in India. Table 1 presents information, for 1981, on adult illiteracy rates in rural and urban India for

an eight-fold classification of the population based on gender, sector of origin and caste, for two States of the Indian Union – the 'backward' State of Bihar and the 'progressive' State of Kerala. Table 1 indicates that if we hold sector of origin and gender constant, then the hiatus in adult illiteracy rates between the 'advantaged' 'Others' group and the disadvantaged 'Scheduled Caste and Tribe' (SCST) group is systematically smaller in the backward State of Bihar than in the progressive State of Kerala. Table 2 suggests that, in the rural areas of the country in 1981, the differential in the Infant Mortality Rate for the 'Others' group and the SCST group is lower for the backward State of Uttar Pradesh than for the progressive State of Kerala. Table 3 suggests that, again in the rural areas of the country in 1983, income money-metric poverty headcount ratios are less differentiated as between the SCST and 'Others' caste groups in the backward State of Bihar than in the 'forward' State of Punjab. Are we to infer from these statistics that an overall progressive movement from a Bihar-type status to a Kerala-type status in the matter of education, or from a Uttar Pradesh-type status to a Kerala-type status in the matter of infant mortality, or from a Bihar-type status to a Punjab-type status in the matter of consumption expenditure poverty, ought to be resisted on grounds of their being accompanied by increased caste-related concentration in performance? Scanlan makes a not un-connected point on his webpage, concerning the feminization of poverty. If one is especially concerned about the incidence of poverty among female-headed households, as a disadvantaged group, then, with societal advance, ironically one can expect to see an increasing proportion of the poorest households being headed by a female, according to *HRX*.

Table 1: Group Related Data on Adult Illiteracy Rates: Bihar and Kerala 1981*

Group	Bihar	Kerala
RFSCST	0.992	0.555
RFO	0.884	0.277
Ratio of Group Rates	1.12	2.00
RMSCST	0.794	0.369
RMO	0.610	0.123
Ratio of Group Rates	1.30	3.00
UFSCST	0.857	0.401
UFO	0.534	0.203
Ratio of Group Rates	1.61	1.98
UMSCST	0.559	0.223
UMO	0.230	0.081
Ratio of Rates	2.43	2.75

* R stands for Rural and U for Urban; SCST stands for Scheduled Caste and Tribe and O for Others; and F stands for Female and M for Male; so that RFSCST stands for Rural Female Scheduled Caste and Tribe, and so on.

Source: Extracted from Table 1 in Majumdar and Subramanian (2001), itself obtained from computations based on data in *Social and Cultural Tables*, Census of India, 1981.

Table 2: Group Related Data on Infant Mortality Rates: Uttar Pradesh and Kerala 1981*

Group	Uttar Pradesh	Kerala
RSCST	189.7	37.4
RO	158.4	28.3
Ratio of Rates	1.20	1.32

* RSCST stands for Rural Scheduled Caste and Tribe, and RO for Rural Others. Infant mortality rates are expressed in deaths before age one year per one thousand live births.

Source: Extracted from Table 4 in Majumdar and Subramanian (2001), itself obtained from computations based on data in *Mortality Differentials in India: 1984, Fertility Differentials in India*, Office of the Registrar General, *Social and Cultural Tables, Special Tables for Scheduled Castes and Tribes*, Census of India, 1981.

Table 3: Group Related Data on Poverty Headcount Ratios: Bihar and Punjab 1981*

Group	Bihar	Punjab
RSCST	0.7701	0.2763
RO	0.6025	0.0858
Ratio of Rates	1.28	3.22
USCST	0.6651	0.3761
UO	0.4746	0.1971
Ratio of Rates	1.40	1.91

*RSCST stands for Rural Scheduled Caste and Tribe, RO for Rural Others, USCST for Urban Scheduled Caste and Tribe, and UO for Urban Others. Poverty ratios have been computed for the official rural and urban poverty lines recommended by the Indian Planning Commission.

Source: Extracted from Table 6 in Majumdar and Subramanian (2001), itself obtained from computations based on data in National Sample Survey Organization (1986): *Pattern of Consumer Expenditure of Scheduled Caste and Scheduled Tribe Households: Report No. 332.*

Crime and Punishment

Lyons and Walsh (2010) note that, although crime across the USA is down, arrests are up, particularly in low-income communities. Using data for the District of Columbia, they substantiate that people of colour disproportionately bear the burden of poverty and incarceration; that the drug war increases incarceration and racial disparities in the justice system; and that youth of color are disproportionately impacted by the justice system. Lyons and Walsh make policy recommendations, principally, to improve public safety and promote community well-being. Needless to say, the proposed policy measures may be vulnerable to HRX, in that, as arrests are pushed lower into the bottom quantiles of the income distributions of both the advantaged (whites, we assume) and disadvantaged (persons of colour), it may transpire that the proportion of incarcerations which accrue to the disadvantaged will increase.

Discipline Referrals and Exclusions in Schools

Yet another context in which Scanlan’s Rule might be operating is in the field of ‘virtue and reward’ as applied to students in schools. ODR refers to ‘office discipline referrals’ in schools, typically leading to exclusion of

students; SWPBS represents a set of criteria lately adopted for 'school-wide positive behavior support'. It is known that students from minority backgrounds have always received ODR at a disproportionately higher rate than their white peers; SWPBS implementation has been associated with overall reductions in ODR, but disproportionate exclusion of African American students relative to all other ethnicities has been persistent (see Vincent and Tobin 2011 on this): this is another example of *HRX* in operation.

Fair Lending Laws and Policies

A lender's lowering of the credit score required for a borrower to secure some favorable lending outcome, while tending to reduce relative differences in rates of securing the outcome between supposed advantaged and disadvantaged groups, will, according to Scanlan's Rule, tend to increase the relative differences in the adverse outcome, which is the denial of such credit. Similarly, encouragement by the Federal Reserve System for mortgage providers to relax their lending criteria⁵ will tend to reduce relative differences in mortgage approval rates but increase relative differences in mortgage rejection rates, possibly leading to "an enforcement regime in which federal regulators encourage lenders to take actions that make it more likely that the federal government will sue them" (Scanlan, 2013). Clearly these statistical inescapabilities are highly relevant for the way in which fair lending laws are monitored and their success rates viewed.

Health Issues

*Healthy People 2020*⁶ defines a *health disparity* as "a particular type of health difference that is closely linked with social, economic, and/or environmental disadvantage. Health disparities adversely affect groups of

⁵ For evidence of disparities in access to mortgage credit in the USA in the period 2004-2009, for African-Americans and Latinos relative to Asian and non-Hispanic white borrowers, see Jourdain-Earl (2011).

⁶ See <http://www.healthypeople.gov/2020/about/disparitiesAbout.aspx>

people who have systematically experienced greater obstacles to health based on their racial or ethnic group; religion; socioeconomic status; gender; age; mental health; cognitive, sensory, or physical disability; sexual orientation or gender identity; geographic location; or other characteristics historically linked to discrimination or exclusion.”

As two specific examples, consider that reducing blood pressure may increase relative differences between the disadvantaged and the advantaged in hypertension, while reducing relative differences in rates of avoiding hypertension; and that generally improving folate levels may tend to increase relative differences in low folate while reducing relative differences in adequate folate. These outcomes are precisely what Scanlan’s Rule would predict⁷.

In the so-called Whitehall Studies, Marmot et al. (1991) and Marmot and Shipley (1996) observed sharp social gradients in all major causes of death among British civil servants – a relatively homogenous group whose members suffer from little material deprivation – sharper than within the UK population at large. As we have seen, *HRX* can provide the missing link, whereby large relative inequalities in mortality (and small relative differences in survival) occur with declining mortality overall.

SCANLAN’S RULE AND THE FIRST CONUNDRUM

The review in the preceding section suggests that Scanlan’s Rule is a fairly pervasive feature of group differentials in social and economic indicators. It also seems to pave the way for the first of the two conundrums mentioned in the Introduction to this essay, namely that analysts could come to mutually opposing conclusions on the nature of social improvement depending upon whether group comparisons are

⁷ See Smedley *et al.* (2003) and Alcena (2013) for additional discussion.

undertaken in terms of 'failure' rates or 'success' rates. The following numerical example, revolving around hypothetical data on child mortality rates and child survival rates (expressed as a proportion of live births) at two points in time, illustrates the potential difficulty under discussion. The child survival rate is just one *minus* the child mortality rate; and we presume the existence of two groups – the 'disadvantaged group' *D* and the 'advantaged group' *A*. We shall assume that each group accounts for one-half of the total population. Table 5 summarises the relevant data. Table 5 tells us that the prevalence rate of child mortality declines from 0.45 in period 1 to 0.35 in period 2, while the disadvantaged-to-advantaged ratio of mortality prevalence rates rises from 1.25 to 1.33: an improvement in average performance has thus been accompanied by a deterioration in relative group outcomes. When it comes to the child survival rate, again we find an improvement in the average survival rate, from 0.55 in period 1 to 0.65 in period 2; and furthermore, the disparity in group performance has also improved, in terms of a rise in the disadvantaged-to-advantaged ratio of survival prevalence rates from 0.83 to 0.86. Going by survival rates, we have an improvement in terms of both size and distribution. Going by mortality rates we have an improvement only in terms of size, and are driven to the opposite conclusion in terms of distribution. This is the 'Dilemma of Opposing Inferences (DOI)'.

Table 5: Hypothetical Grouped Data on Child Mortality and Child Survival Rates*

Statistic	Group D (Dis- advantaged)	Group A (Advant- aged)	Aggregate	Relevant Ratio
Child Mortality Rate in Period 1	0.5	0.4	0.45	
Child Mortality Rate in Period 2	0.4	0.3	0.35	
Ratio of Group D CMR to Group A CMR in Period 1				1.25
Ratio of Group D CMR to Group A CMR in Period 2				1.33
Child Survival Rate in Period 1	0.5	0.6	0.55	
Child Survival Rate in Period 2	0.6	0.7	0.65	
Ratio of Group D CSR to Group A CSR in Period 1				0.83
Ratio of Group D CSR to Group A CSR in Period 2				0.86

* CMR stands for Child Mortality Rate and CSR for Child Survival Rate.

Source: Authors' hypothetical data

Does the DOI call into question standard approaches to measuring inter-group relative disadvantage (including one due to Sen, 1979, which is cast in capabilities space)⁸? We would argue not. The trouble stems rather simply from the faulty expectation that trends in the

⁸ Quoting from Sen's remarks on the award of his Nobel Prize: "The approach explored sees individual advantage not merely as opulence or utility, but primarily in terms of the lives people manage to live and the freedom they have to choose the kind of life they have reason to value. The basic idea here is to pay attention to the actual "capabilities" that people end up having. The capabilities depend both on our physical and mental characteristics as well as on social opportunities and influences (and can thus serve as the basis not only of assessment of personal advantage but also of efficiency and equity of social policies)."

inter-group disparity of failure rates must precisely reflect trends in the inter-group disparity of success rates, an expectation that emerges from the notion that success, after all, can be straightforwardly taken to be a mirror-reversal of failure. It is, as it happens, just mistaken to believe that patterns of inter-group differentials in poverty will be identical to patterns of inter-group differentials in non-poorness: this is something which poverty analysts will be quick to appreciate – even if the measure of poverty (and non-poorness) employed is the elementary headcount ratio. The difficulty is in considerable measure a semantic one: habits of language tend to entangle – for instance – ‘mortality rates’ with ‘survival rates’, leading to the facile (and erroneous) conclusion that when we refer to the one we refer (with simply a change in sign, so to speak) to the other. If Brutus were guilty of thus confounding the rigours of logic with the looseness of language, we should be justified in taking a liberty with Cassius and saying: ‘The fault, dear Brutus, is not in our measures, but in us, that we are confused’. The conundrum we have called the Dilemma of Opposing Inferences would dissolve if we were to take a deliberate view of the variable whose behaviour we are interested in (poverty/non-poorness, mortality/survival, unemployment/employment, success/failure, etc.), and to confine our attention to the variable we have decided on, without carelessly entertaining the expectation that trends in the inequality of the chosen variable must be inseparable from trends in the inequality of the variable’s binary opposite.

Secondly, the DOI boils down to a commonly-encountered problem in inequality measurement – that of a want of unambiguous consensus on the outcome of comparisons in the presence of a plurality of inequality measures. In addition to the ratio of rates, suppose we were to measure inequality in terms of the standard deviation, the coefficient of variation, and the Krtscha (1994) measure, which is just the product of the standard deviation and the coefficient of variation. Table 6 summarises information on the values of these inequality measures for the distributions of both child mortality and child survival presented in

Table 5. As Table 6 reveals, it is only the standard deviation which pronounces that, whether we employ the distribution of child mortality or child survival rates, the inequality between the disadvantaged and the advantaged group in period 1 and period 2 is identical (and non-existent). In each of the other three cases (for the ratio of rates, the coefficient of variation and the Krtscha Index), between-group inequality *rises* from period 1 to period 2 when we employ child mortality rates, and *declines* when we employ child survival rates. Unless we can independently establish the unique superiority of a wholly mean-dependent (absolute) measure such as the standard deviation, it is not clear that we are obliged to be indifferent as between employing mortality and survival distributions⁹. As mentioned earlier, the problem of rank-reversal in the presence of a plurality of inequality measures is a common enough phenomenon in inequality measurement, and not a serious cause for calling into question the validity of our measurement protocols.

⁹ Indeed, an aspect of this problem has been explored in some depth by Lambert and Zheng (2011) in the context of a requirement of consistency which demands, in general, that for a fixed inequality measure, ‘shortfall inequality’ and ‘attainment inequality’ should mirror each other. Such consistency is found by the authors to be rarely encountered amongst inequality measures. As they put it (Lambert and Zheng 2011; p. 217): ‘It has been argued in respect of pure inequality measurement, that attainment inequality and shortfall inequality are two sides of the same issue and both should be examined. In this paper, we have taken up the issue and introduced a consistency condition to ensure that both sides be measured consistently. Our results demonstrate inter alia that if one of our attainment and shortfall consistent absolute inequality indices is not used, then attainments and shortfalls will need to be given separate and careful attention in measuring health inequality. ... Only the absolute notion of inequality measurement can respect the consistency condition. We have identified, in two general classes of absolute inequality indices, the necessary and sufficient conditions under which attainment and shortfall inequality are measured consistently. We have further demonstrated the cutting power of the consistency condition on a decomposable inequality index: only the variance can be consistent, among decomposable inequality indices of all types, in ranking attainment and shortfall inequality.’ The lesson is that consistency, as understood in the present context, is a property that is confined to a subset of (as it happens, absolute) inequality measures, and it would be careless and erroneous to either presume otherwise or proceed as if it didn’t matter whether one were speaking of shortfall or attainment inequality. Scanlan’s Rule, thus, does not so much spell fatality for many standard approaches to measuring inequality as underline the need for care in the use and interpretation of these approaches.

Table 6: Alternative Inequality Measures and their Values for the Distributions in Table 5

Distribution	Ratio of Rates (Disadvantaged Group to Advantaged Group)	Standard Deviation	Coefficient of Variation	Krtscha Index
Period 1 Child Mortality Rates for the Two Groups	1.25	0.05	0.1111	0.0056
Period 2 Child Mortality Rates for the Two Groups	1.33	0.05	0.1429	0.0071
Period 1 Child Survival Rates for the Two Groups	0.83	0.05	0.0909	0.0045
Period 2 Child Survival Rates for the Two Groups	0.86	0.05	0.0769	0.0039
Nature of Change in Inter-Group Inequality Between the Two Periods when we employ the Child Mortality Distributions	Increase	No Change	Increase	Increase
Nature of Change in Inter-Group Inequality Between the Two Periods when we employ the Child Survival Distributions	Decline	No Change	Decline	Decline

Source: Based on figures in Table 5

SCANLAN'S RULE AND THE SECOND CONUNDRUM

The Problem

As noted earlier, a second conundrum arising from Scanlan's Rule is the 'Dilemma of Social Progress (DOSP)'. If between-group inequality is seen to matter, and if such inequality is found to rise with a decline in the overall prevalence of some unfavourable outcome (such as mortality), then we have a conflict between the claims of equality and efficiency. If, additionally, equality is seen to trump other social virtues, then that is as good as saying that overall social progress must be sacrificed at the altar of group equality. Is this dilemma an inevitable outcome of Scanlan's Rule? We shall argue not. In particular, what we would urge is a certain clarity in our assessment of that old theme of 'Equality versus Efficiency': how we choose to resolve the DOSP must be a function of the deliberate and reasoned stand we adopt on the claims of equality and efficiency. This well-worn theme is reviewed in what follows.

Equality and Efficiency: Revisiting Three Strands of an Old Theme

Stated baldly, there are three views one can take of the social virtues of equality and efficiency:

- (a) only equality matters;
- (b) only efficiency matters; and
- (c) both equality and efficiency matter.

One who subscribes to (a) is a pure egalitarian, for whom nothing matters but equality; one who subscribes to (b) is a utilitarian, for whom nothing matters but aggregate utility; and one who subscribes to (c) is a pluralist egalitarian. These useful distinctions are due to Parfit (1997)¹⁰, who says (p. 205, *op. cit.*):

¹⁰ Parfit, in fact, differentiates between *telic* egalitarianism and *deontic* egalitarianism (corresponding, roughly, to intrinsic and instrumental reasons for favouring equality), and proceeds to draw a distinction between pure and pluralist *telic* egalitarianism. For our purposes here, the difference between *telic* and *deontic* egalitarianism is not of much moment, and accordingly we shall not insist on the distinction, and shall speak only of pure and pluralist egalitarianism.

If we cared only about equality, we would be *Pure Egalitarians*. If we cared only about utility, we would be Utilitarians. Most of us accept a pluralist view: one that appeals to more than one principle or value. According to *Pluralist Egalitarians*, it would be better both if there was more equality, and if there was more utility. In deciding which of two outcomes would be better, we give weight to both these values.

One way in which we can give content to the above distinctions is discussed in Christiano and Braynen (2008) and Subramanian (2011). In this view, a pure egalitarian is one who will always prefer an equal distribution (of wellbeing, utility, income, resources, of some appropriate conception of the 'good' in general) to an unequal distribution. A utilitarian is one who will always prefer the distribution with the larger sum-total of the good to the distribution with the smaller sum-total. A pluralist egalitarian is one who, given two equi-dimensional distributions of *a given sum* of well-being, will prefer an equal to an unequal distribution, and, given two equal equi-dimensional distributions of wellbeing, will prefer the distribution with the larger sum-total of wellbeing to the distribution with the smaller sum-total.

Scanlan's Rule and the Three Strands

It is useful to invoke Figure 1 here again – enhanced, in Figure 2, with a few additions. This device is borrowed from Lambert and Subramanian (2014).

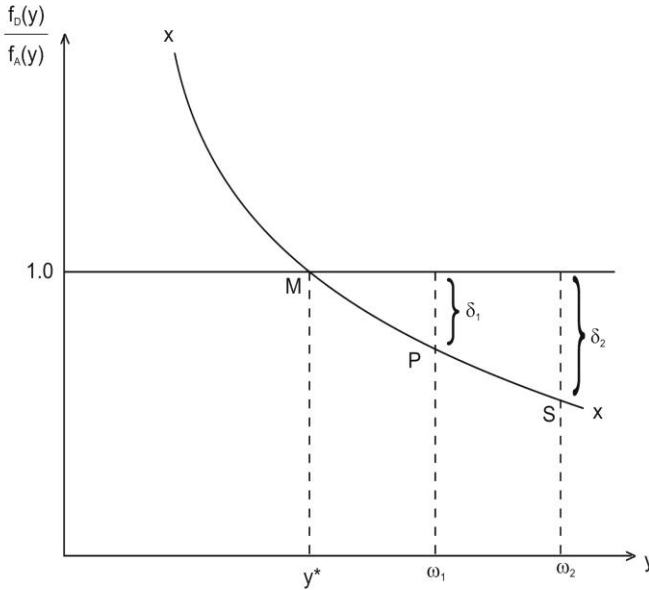


Figure 2: The Disparity Curve Revisited

In Figure 2, we measure wellbeing y on the horizontal axis and the ratio of disadvantaged-to-advantaged group prevalence rates on the vertical axis. A distinguished level of individual wellbeing, denoted by y^* , is one at which the prevalence rates for the two groups are the same ($f_D(y^*) = f_A(y^*)$), and this happens at the point M on the disparity curve in Figure 2. The figure indicates that at relatively low levels of wellbeing (typically below y^*), the disadvantaged group D is thicker on the ground than the advantaged group A , while at relatively high levels of wellbeing (typically above y^*), group D is thinner on the ground than group A . A typical social state reflects some combination of wellbeing level and inter-group disparity in prevalence rates, and is represented by a point such as P on the disparity curve of Figure 2. We shall take it that at the point P the wellbeing level w_1 corresponds to the mean level of

wellbeing \bar{y} , while δ_1 , which is the vertical distance between the point P and the unit line drawn through the vertical axis, will be taken to represent the extent of inter-group inequality that obtains at the wellbeing level w_1 (or \bar{y}). Now consider another social state, as represented by the point S (with coordinates (w_2, δ_2)) on the disparity curve XX in Figure 2. In moving from P to S , clearly we have a transition to a higher level of overall wellbeing (w_2 is greater than w_1) and also to a larger extent of inter-group inequality in prevalence rates (δ_2 is greater than δ_1). How would the pure egalitarian, the utilitarian, and the pluralist egalitarian respond to the suggestion of a movement from P to S ?

The pure egalitarian would obviously resist the move from P to S . Possessing, as he does, a uni-dimensional view of the social desideratum, one in which the only virtue that matters is equality, he will prefer P to S . He would in no way be deterred by what Parfit (1997) calls the Levelling Down Objection, which is the objection that there is *no* respect in which it would be appealing to drag the better-off down to the level of the worse-off in the cause of equality. Indeed, the pure egalitarian's favourite point on the disparity curve in Figure 2 would be the point M , at which, as we have seen, the two groups' prevalence rates are equalized (so that δ is zero at M). But this would mean settling for the low level of overall welfare y^* .

The utilitarian also has a uni-dimensional view of the social desideratum, one in which the only virtue that matters is efficiency, so he would readily welcome the movement from P to S on the disparity curve. Indeed, he would be inclined to travel as far rightward along the disparity curve as possible, that is to say, towards greater and greater levels of aggregate wellbeing.

The second conundrum associated with Scanlan's Rule - the Dilemma of Social Progress - should be a cause for genuine concern if it were the case (a) that anyone with a concern for equality would *have* to be a pure egalitarian in order to qualify as an egalitarian, and (b) that, failing this, the only alternative available to one would be to subscribe to utilitarianism. But this is surely not the case. There is no reason why a pluralist egalitarian should resist the move from P to S along the disparity curve XX in Figure 2. By the same token, and unlike the utilitarian, the pluralist egalitarian is not *obliged* to endorse the move from P to S . It is open to the pluralist egalitarian to assess the overall 'goodness' of a social state in terms of a real-valued indicator V , where V is given by a quantity such as $w/(1+\delta)$, which has the property of being an increasing function of w and a declining function of δ . For such an egalitarian, the movement from P to S is worthwhile if $w_2/(1+\delta_2)$ is greater than $w_1/(1+\delta_1)$, and the other way around if $w_2/(1+\delta_2)$ is less than $w_1/(1+\delta_1)$.

Furthermore, suppose $w_2/(1+\delta_2)$ is less than $w_1/(1+\delta_1)$; then it is conceivable that there exists a δ_3 which is smaller than δ_2 and greater than δ_1 , such that $w_2/(1+\delta_3)$ is exactly equal to $w_1/(1+\delta_1)$. The social state defined by the coordinates (w_2, δ_3) is represented by the point Q in Figure 3. Notice now that the point Q can be seen as lying on the disparity curve YY in Figure 3, which, in turn, can be seen as having been derived from the disparity curve XX via a flattening of the latter. The pluralist egalitarian displays her commitment to equality by resisting the move from P to S , because the gain in wellbeing is seen to be more than neutralized by the loss due to enhanced inequality; at the same time, she also displays her commitment to efficiency by recommending a flattening of the disparity curve from XX to YY to ZZ and

so on¹¹, which will allow a movement from point P to points vertically above Q . Briefly, a commitment to equality does not require one to be a pure egalitarian, anymore than a commitment to efficiency requires one to be a utilitarian. In pushing for greater orders of both equality and efficiency, a pluralist egalitarian will essentially seek a flattening of the disparity curve. Operationally, this demand, one imagines, would be a demand for some form of 'reverse discrimination', whereby assistance, in terms of privileges or concessions, is targeted exclusively and differentially to the relatively disadvantaged group D .

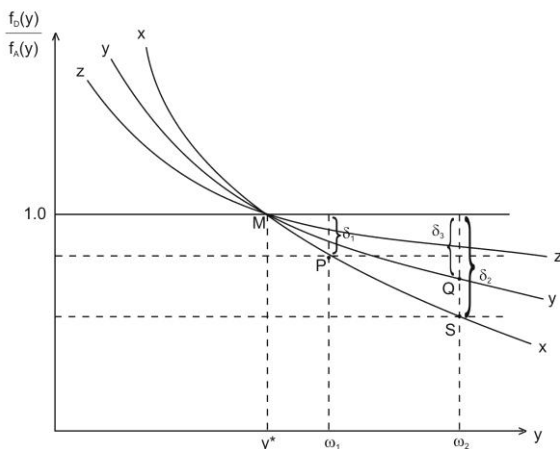


Figure 3: Flattening the Disparity Curve

Group Disparities and Reverse Discrimination

Reverse discrimination (or, variously, 'positive discrimination' or 'compensatory discrimination' or 'affirmative action') goes against the grain of the principle of 'horizontal equity'. Horizontal equity demands

¹¹ Suppose indeed that YY is derived from XX through implementation of some appropriate policy of reverse discrimination in behalf of Group D . Is the regime represented by YY exempt from the reign of Scanlan's Rule? No, of course not. Targeted assistance to a disadvantaged group may not eliminate group differences in such a way as to unsettle the relevance of Scanlan's Rule. But this is surely not a problem, unless of course one wished to make 'elimination' an enemy of 'reduction'.

that people of equal status should be treated equally. If our concern is with income, horizontal equity would demand the equal treatment of all persons with the same income status; if our concern is with health, horizontal equity would demand the equal treatment of all persons with the same health status; and so on. To fix ideas, let us specify income as the primary variable of interest from a distributional point of view. When would the requirement of horizontal equity with respect to income be appealing? When – one supposes – individuals are identical in respect of all relevant *non-income* characteristics¹². Where this condition is satisfied, we have a population which is *homogeneous*. Where it is not, we have a population that is *heterogeneous*. Typically, reverse discrimination is used when we are dealing with heterogeneous populations, for example to transcend the stigma of past racism or to offset historical disadvantages passed on from generation to generation, whose effects can otherwise linger for decades or centuries¹³.

The social choice principle of *anonymity* and its counterpart, *symmetry*, in distributional analysis would require social outcomes and judgements to be invariant with respect to the personal identities of individuals. Anonymity/symmetry is a common feature, as Loury (2002) points out, of many 'liberal constitutions'. The implicit presumption is of a homogeneous population, and one, furthermore, where certain characteristics such as gender, place of birth, religion and race are not

¹² Such non-income characteristics would, commonly, include age, family size and composition, disability status, and so on. An example of a distinction based on a non-income characteristic is afforded in the Biblical injunction 'Unto a stranger thou mayest lend upon usury; but unto thy brother thou shalt not lend upon usury' (Deut. 24:20). For a discussion of characteristics which are commonly regarded as being relevant for a relaxation of the horizontal equity rule, the reader is referred to Lambert and Yitzhaki (1995). (See also, in this connection, Parry et al., 2007 and Adler, 2008.)

¹³ In respect of college admissions procedures, one sees both 'race-neutral' and 'race-conscious' approaches in public education in the USA, the former using geography and family income to sort applicants, the latter also taking information about applicants' race, gender, color, ethnicity, or national origin into account in pursuit of enhanced diversity, perceived as a benefit on campus. Targeted outreach programs, directed to women (e.g. encouraging girls to study science or engineering) and to underrepresented minority high school students, are prevalent in some States.

counted among the characteristics that could contribute to a failure of homogeneity. The issue is largely an empirical one. There is a great deal of evidence to suggest that a partitioning of the population on the basis of characteristics such as gender, place of birth, religion, caste and race – apart from the more commonly accepted characteristics of age, household demographics and disability - does in fact precipitate groupings that can be systematically distinguished in terms of relative advantage and relative disadvantage¹⁴. It is sensible, in practical assessments of the phenomenon of inequality, to permit the textbook presumption of homogeneity to yield place to the pervasive reality of heterogeneity. Indeed, it can be argued that, in many ways, it is the fact of heterogeneity which makes the problem of inequality a morally salient and interesting one¹⁵.

Heterogeneity in distributional analysis is a famously difficult issue to handle. The employment of 'equivalence scales' to 'normalize' for variations in family demographics is a typical example of a response to heterogeneity, which later – as evidenced in the work of analysts such as Glewwe (1990), Ebert (1997) and Shorrocks (2004), among others – could serve as a basis of a conflict between principles such as 'symmetry' and 'transfer'. This is mirrored in the conflict between principles of 'horizontal equity' and 'reverse discrimination'.

¹⁴ Inequalities of treatment which exist and persist between demographic groups even when economic agents are rational and non-prejudiced may be based on lack of information or differing degrees of knowledge about different groups. This is known as statistical discrimination (Phelps 1972, Arrow 1973). For example, it has been suggested that home mortgage lending discrimination against African Americans, which is illegal in the USA, may be partly caused by statistical discrimination, which "can arise if race is correlated with some hard-to-measure determinants of creditworthiness" (Longhofer, 1995). It can, perhaps, also be engineered. At a case brought to the International Court of Justice in 1966 against South Africa, a Dissenting Judgement was that "Discrimination according to the criterion of 'race, colour, national or tribal origin' in establishing the rights and duties of the inhabitants of the territory is not considered reasonable and just. . . If differentiation be required, it would be derived from the difference of language, religion, custom etc. not from the racial difference" (Brownlie, 1971, p. 455).

¹⁵ It is, indeed, at the heart of Sen's (1973) celebrated critique of utilitarianism, and serves as an integral aspect of his 'capability'-mediated perspective on inequality and deprivation.

Another way of seeing the conflict is in terms of the distinction between 'formal' and 'substantive' equality. Of assistance here is the distinction which Dworkin (1977) draws between two types of the right to equality, which he refers to as 'the right to equal treatment' and 'the right to treatment as an equal'. The first notion of equality, as Dworkin explains, prescribes an equal division of a society's burdens and benefits amongst its members. The second notion prescribes that every individual should be treated with the same respect and concern as every other individual, and this will sometimes require that unequals be treated unequally, with differential discrimination being done in behalf of socially and economically disadvantaged groups, or historically wronged and oppressed groups. Indeed, preferential treatment based on race can be seen as the other side of the statistical discrimination coin - legitimate because race proxies socioeconomic advantage so well; and also because 'group justice' is not (always) about partitioning according to wellbeing attributes but also about partitioning by identity attributes, especially when these partitions yield substantial areas of intersection (and targeting by race is easier than targeting by economic or health status). Indeed, if there are systematic differences in socioeconomic outcomes of wealth, health and education – as revealed by socioeconomic indicators - as between racial groups, then, we assert, there *is* a case for compensatory discrimination on the basis of race^{16,17}.

¹⁶ For example, providing immunization solely to blacks is surely fine in the event of race-specific diseases; and it would be equally in order to focus special attention on people of European descent when addressing the problem of cystic fibrosis; just as it would be in order to focus special attention on persons of African origin when addressing the problem of sickle-cell anaemia. Braveman (2006, pp. 181-182) makes a somewhat different point: "Both ethical and human rights principles call for equal opportunities for all people to be as healthy as possible, not merely using medical care to buffer the health-damaging effects of underlying unjust living conditions. ... pursuing health equity means removing obstacles for groups of people—such as the poor, disadvantaged racial/ethnic groups, women, or persons who are not heterosexual—who historically have faced more obstacles to realizing their rights to health and other human rights".

¹⁷ Reverse discrimination on the basis of gender has attracted conflicting judgements. Are preferential measures for minorities inapplicable to women? For Scanlan (1992) , "one of the most neglected issues has been the wisdom or propriety of extending such preferences .. to women, just over one-half the population", notwithstanding that the economic consequences of gender-based discrimination are passed on to male as well as female heirs. On the other hand, gender-based anti-

The right to treatment as an equal, thus, is at the heart of 'reverse discrimination'; and it is to the desirability of this arrangement which the second conundrum arising from Scanlan's Rule drives us. The flattening of the disparity curve in Figure 3, as a means to securing higher orders of both equality and efficiency, is in the end inspired by the appeal of the phenomenon of compensatory discrimination, which we take to be, largely, the lesson taught by Scanlan's Rule.

CONCLUSIONS

We have catalogued here some findings which stem from a careful analytical study of the *HRX* property, also known as Scanlan's Rule, indicating the sort of social policy measures that are indicated for the concerns or issues which the application of *HRX* brings to the fore, not least those relating to group inequalities and overall social progress. Our own understanding of the larger problem involved is informed, in considerable measure, by Thurow's (1980; pp. 179, 180, 182) perspective on the matter:

Is the correct economic strategy to resist group welfare measures and group redistribution programmes wherever possible? Or do groups have a role to play in economic justice? ... [I]t is not possible for society to determine whether it is or is not an equal opportunity society without collecting and analyzing economic data on groups ... Individuals have to be judged based on group data ... A concern for groups is unavoidable.

discrimination policy has been found by some to be less controversial than analogous policies targeting blacks (Strolovich, 1998). It has been argued that it is impossible to enact policies in the United States that redistribute resources in favor of less advantaged groups, given this country's deep-rooted ethos regarding individual responsibility and entrepreneurship. Also often cited is the relative lack of tradition of social solidarity in the United States, reflected by, for example, universal health care coverage taken for granted in Western European nations.

The final message of this paper is in consonance with Thurow's sentiments, as quoted above. This message is not, certainly, that a concern for equality is warranted but can stymie the possibility of progress; but rather that, what is wrong, and needs addressing, is the accumulated history of group discrimination. A concern for groups, as Thurow asserts, is unavoidable.

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