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**TO EACH ACCORDING TO HER WORK ?
JUST ENTITLEMENT FROM ACTION : DESERT, MERIT,
RESPONSIBILITY, AND EQUAL OPPORTUNITIES.**

A review of John Roemer's Equality of Opportunity

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Abstract

The main social rule of allocation is according to action (free choice, labor or effort), following principles of natural right (aim-freedom), desert, merit, responsibility, deservingness, and equality of opportunity. These different concepts are defined, formalized, compared, associated with resourcist and consequential justices (possibly egalitarian and/or welfarist), evaluated, compared with other rules and historical theories, and applied. This provides answers to the questions raised by John Roemer's innovative proposal for responsibility and equality of opportunity. This presentation includes the corresponding social ethical evaluation functions, the decomposition of inequality according to effort and circumstances, the types of relative merits and equal opportunities, and the application to global income redistribution.

1. Introduction¹: Action-based distributive justice

1.1. Summary

“Whatsoever a man soweth, that shall he also reap”². Are you entitled to, or liable for, the products or effects of our own doing? Realized with which means or in which circumstances? Are they fully yours, or which part of it is, or which part of your action entitles you with this right or liability? Why is it so? The freedom manifested by this entitlement from action³ is the main reason for the allocation of goods and rights; it constitutes the main part of social ethics and justice in society. “To each according to her work” is both the capitalist opposition to absolutism and birth-rights for Locke, and the socialist opposition to capitalist exploitation and inheritance for Blanqui and Marx. The latter, however, also demand “from each according to her capacities”. But don’t “to each according to her work” also imply “to each according to her capacities”, thus giving back what was demanded? If not, how does one make the difference? Morally, the underlying principles claim that this allocation is a natural right and freedom (the basic “process-liberalism”), or they refer to concepts of merit, desert, responsibility or rewarding effort, possibly manifesting or requiring equality of opportunity. Do these principles exclude allocation according to need(s), to capacities to enjoy, to other personal characteristics, or equally in resources, outcome or happiness, and, if not, how do these various heterogeneous principles integrate? Most of these principles, moreover, are “thick” moral concepts, arising from social meaning and practice, rather than “thin” ones, abstract and theoretical, hence *a priori* precise but also rarely understood or accepted for implementation⁴. Hence, the precise and general analysis of these principles, which their formalization can permit, may constitute an important progress. Main problems in this respect happen to arise from the questions raised by John Roemer’s recent innovative essay and formula about *equality of opportunity* and responsibility.

These problems are faced, in this paper, with a group of new proposals. Main results concern the logic of the relevant plurivalued ethics which combine principles of four different

¹ I wish to thank Marc Fleurbaey, Dirk Van de gaer, and John Roemer for suggestions and information which helped improving this text. I alone am responsible for remaining mistakes.

² New Testament, Galatians VI.

³ An agent’s action is a set of acts of hers which is, for her, free, intentional and meaningful (the theory of action is a classical and main topic in philosophical psychology).

⁴ See B. Williams (1985).

natures: allocations according to action, effort or choice for reasons of responsibility, desert, merit, natural right, or equality of freedom or of opportunity; allocations for reasons of privacy, respect of self, or natural rights; egalitarian ressourceist allocations equally sharing resources or compensating for unequal circumstances; and consequentialist concerns which can care about welfare or more specific goods, and can be more or less egalitarian in outcomes. The corresponding social evaluation functions are shown (notably the “means of means”). With the evaluation-respecting ethical inequality measures, inequality in output about additively decomposes into inequalities due to effort and to given circumstances. The logical meanings of the various concepts are presented (responsibility, desert, merit, process-freedom, equal opportunities, effort, etc.). An essential distinction is that between the concepts of desert and merit – where the agent is entitled to the effects of some given circumstances (such as some of her capacities). In relative merit, responsibility, entitlement and accountability start from benchmarks of action which can be of several natures. This leads to evaluation functions dual to those representing desert, and which can respect Pareto-efficiency. Desert and relative merit respectively underlie the two types of equality of opportunity. A relative-meritarian equality of opportunity for labor constitutes the efficient redistribution that respects classical basic rights and is appropriate for “macrojustice”, the centerpiece of the hierarchical necessary structure of justice in society. The desert equality of opportunity relates to “equity” (no-envy) and its extensions are noted. The corresponding bi-dimensionality of the benchmark for assigning responsibility, referring to given circumstances and to the action, is presented and discussed. These concepts are related to the essential model of justice of Plato and Aristotle. The very convenient possibility of representing effort and responsibility by the relative rank in each set of circumstances depends on two conditions which are pointed out and discussed. The possible justifications of Pareto-efficiency are proposed. The various moral shortcomings of action-based justice are emphasized, and its alternatives are noted.

Following brief remarks about the moral shortcomings of these principles and yet the importance of their analysis, and the explicitation of the essence of Roemer’s theory, this paper will successively consider the questions raised or implied by this theory along with the proposed answers. It will thus discuss the definition and object of responsibility, lowering inequality for equal desert, lowering consequential injustice, the decomposition of inequality according to its causes, and the meanings of the relevant moral concepts. The dual theory of relative merit will then be considered, with its objective or endogenous benchmarks, its

association with consequential justice, and its comparison with desert. We shall then see the two possible logical meanings of equality of opportunities, the relation with “equity”, and the application of relative merit to the efficient principle of global distributive justice.

1.2. Moral misgivings: are equality of opportunity and responsibility good for people?

“Equality of opportunity is good for horse-races, not for people” is a common saying among those of my friends who looked with deep sympathy at John Roemer’s writings in their common philosophy for the last few decades. They now discover his recent essay advocating *equality of opportunity* defined as: “What society owes its members, under an equal-opportunity policy, is equal access; but the individual is responsible for turning that access into actual advantage by the application of effort”. The jacket presentation specifically takes up their analogy and accentuates their worries: “The different views of equal opportunity should be judged according to where they place the starting gate that separates ‘before’ from ‘after’”. I try to explain my friends that the starting gate can be put very close to the arrival (even, in a sense we shall see, “beyond it” in turning ability into a handicap)⁵, that more muscular horses can be loaded more heavily or given a longer distance to run so as to make the outcome depend only of valiancy. To little avail: what they see fit for mankind is solidarity rather than competition, mutual support rather than racing or fighting – even “fair” ones. They feel more responsible for my welfare – or for the destitute’s – than for theirs, whether I reciprocate or not. They see equality not as a value but as the place where to settle for lack of a justified other solution, and they fear few things more than its Robespierriest hypostasis (or “fetishization” – and even some previous Roemer’s writings tended to puzzle them in this respect). They remember that “responsibility” has been the lasting catchword and alibi of the opponents to social security in Europe. They know that desert and responsibility are the carrot and the stick which make the working donkey conform, advance steadily and give the best of its efforts. As principles of allocation, they defend autonomous liberty, need, giving and reciprocity; they tolerate merit and desert for minor issues; but they know that responsibility, and the guilt it may entail, are the concepts of the morals of resentment, punishment, retorsion, abandonment and isolation rather than those proper for an ethic of distribution. The slogan “according to responsibility” tends to reveal – as they see it – either resentment and envy, or a moralistic hypostasis (fetishization) of a banal consequentialist

⁵ Sections 8 and 11; an example is Ronald Dworkin’s “slavery of the talented”.

incentive or of Pavlovian conditioning. For equality of opportunity takes up two terms, equality and liberty, but forgets the most important third one, fraternity. They acknowledge equality of opportunity, responsibility, desert and merit as the moralistic outgrowths of a class-bound worldview, individualism. This is precisely what Marx objected to the Rights of Man which demand the same equal freedom (“Men are free and equal in rights”). These persons see “the career open to talents” and the right to compete for positions without discrimination as the great social progress... of two centuries ago. Yet, they are not more seduced by a government policy aiming at people receiving equal advantage for equal effort, the topic and ideal of Roemer’s essay. This “to each according to her effort” reminds them of the “deserving poor” to whom Victorian aid was restricted, of the puritan – and possibly sadistic – “workfare ethics” (the main motive behind the present “earned-income tax credit” which now touches scores of million households), of the topic of Paul Lafargue’s “right to laziness”, of the Jesuits’ casuistic valuation of intent and effort, or of what Roemer himself calls the “fetishization of labor”. They feel people should receive according to need rather than to self-inflicted pain. They see more “equality of opportunity” in the simple-minded proposals of a “universal basic income”. They appreciate that Roemer’s proposal could be used for securing that “to each according to her work” does not imply “to each according to her capacities”; but they have learnt both from Blanqui and Marx that the socialist “according to work” should only be a transition to “according to need”, and from History that this transition tends to U-turn. And they are prompt to point out that the Soviet power, who put Kropotkin and his friends (apostles of the free dissociation of consumption from work) to jail and to their graves, but strongly emphasized “affirmative action” in education in favor of working-class children, ended setting up well-endowed “schools for bright children” which were soon dubbed “schools for children of bright parents”⁶.

This both epidermic and deep reaction of classical libertarianism⁷ (we should resist the recent hijacking and multiple distortions of this term) can find comfort in the definitive specific moral counterexamples provided by Marc Fleurbaey (1995a, 2000, 2001) and Elizabeth Anderson (1999), and in the problems in defining effort pointed out by Julian Lamont (1995) and Andrew Levine (1999), as criticism of the new school of responsibilist egalitarianism. The basic shortcoming of this school, however, is its monism, its forgetting

⁶ Roemer (1986a) has considered exploitation through unequal educational capital with this specific society in mind.

⁷ Constructive proposals in the spirit of this “second left” are developed in my book of 1984 on “general reciprocity”?

that justice cannot but be a polyarchy of principles, though with specific rational answers for each case and problems hierarchized in scope and importance⁸. The steadiest philosophical objection, however, has focussed on the concept of equality of opportunity, which seems to have the strange fate of being hailed by politicians of all sides (which suggests they do not give it the same meaning) and a pet target for philosophers of all denominations. For John Schaar (1967), for instance, equality of opportunity strengthens the inequalities of the status quo, makes people guilty for their environment's failures, and deceives them in giving them false hopes. John Rawls (1971) argues that people's effort is determined by their environment rather than by their own responsible choice. Bernard Williams (1973) shows that there are many possible concepts of equality of opportunity and that none may obviously fit our intuitions. Along this line, Christopher Jencks (1988) shows, with the example of education, that this expression can mean innumerable things, and he argues that this is why it is so popular. For Peter Singer (1993), equality of opportunity rewards the lucky and penalizes the unlucky. And Janet Richards (1996) concludes: "The obvious moral of all this is that the term should just be dropped. Everything that concerns us about equality of opportunity could be far better expressed in other terms, and if that were done nothing would be lost except potential for confusion, oversimplification and political sleight of hand". These criticisms, however, either aim at the large multiplicity of possible meanings of the expression, or can probably be faced by sufficient specification and precision. Roemer, indeed, says there are two possible meanings and chooses one; and formalization – of which he provides an instance which can be developed – should at least make precise some aspects of the concept or provide an operational basis for this discussion.

1.3 Theoretical, social and historical importance

The evaluation of their moral worth is the most important question concerning these principles. The analysis of the formal properties of principles which should be politically fought would be misused energy. However, there are two deep reasons to hail Roemer's (and others') new research program: realism, and the fact that the other face of bad responsibility is good and necessary freedom. Utopia, the honor of the left, also is its impotence. We are doomed to live in second-best worlds. Politicians – not yet ethicists – rule the place. The skillful way of dealing with a country which boasts to be the land of opportunity may be to try

⁸ See Kolm 1990, 1991a, 1996a, and section 12.

to instill some equality in its principle. And real people strongly claim rights in their outputs, desert, merit, responsibility, and a fair equality of opportunity, even though these are fortunately not all their values. The claim “this is mine because I made it” is essential everywhere and foundational in our society. Now, values held by many people have several good reasons to be analyzed: for helping these people; because their view more or less constrains ethical implementation; because ethics is not pure logic and has to have an anthropological basis; because these views may not be always wrong; and for the pure sake of knowing and understanding. Hence, for both practical and theoretical reasons, there can be good research about bad sentiments (students of the selfish *homo economicus* have never done anything else).

Moreover, the pure (metaethical) theory of justice shows that *equality of liberty* is the general and central first-best principle of individualistic justice among agents (the apparently opposite solutions can be seen as limiting cases of this one⁹). Now, the various uses of notions of equality of opportunity always intend to mean some kind of equality in free choice (for instance, the chosen items are pairs of effort and outcome in Roemer’s intention). And responsibility semantically requires freedom, while freedom morally entails responsibility when it is considered: Both are, then, logically co-extensive. Yet, again, it is more moral to hold me responsible for your welfare (and reciprocally), or at least for the needy’s, than for mine.

This is why the principle “to each as she chooses while equalizing what is given” is de facto the most widespread and studied, at all times and places. This is found as long as we have written records. In fact, it is puzzling for the discipline of social ethics and political philosophy that the best presentation of this question still is the famous and refined analysis of justice in Plato’s *Laws* (book IX) and Aristotle’s *Nichomachean Ethics* (books III and V) and *Eudemian Ethics* (book II). What people voluntarily do – they say in brief – should be allocated to them according to their “merit” (roughly “in proportion to” it, that is, as “geometric equality”, in *commutative justice*), while the rest should be equally shared (“arithmetic equality”, in *distributive justice*), in particular through compensation for unequal given individual circumstances (*rectificative* or *diorthic justice* is their name for this

⁹ Whether they directly care for consumption goods – which are freely consumed –, or for levels of happiness or their variations – since capacities to enjoy can be seen as particular means. See Kolm 1971, 1973, 1993b, 1996a (chap.2), 1999, and sections 7 and 8.

“affirmative action”). This conception, we shall see, provides the Pareto-efficient merit-based theory of equality of opportunity for global distributive justice (see section 11). But various variants are ceaselessly applied or advocated. Even John Locke wants each person appropriating land (by her labour, her horse’s or her servant’s) to leave “as much and as good” for others. And free action, choice or exchange from an equal sharing of given or natural resources has had a long following¹⁰. But Locke also remarked that labor provides “ten or even hundred” times more than land. Hence, later income egalitarians focussed on the human resource. There, however, means and choice are closely linked. One can find (not easily) solutions for labor capacities¹¹. But the mental capacities of the will and of reason, which by definition cause free choice, themselves have a given base (though most of reason is self-creation). At any rate, Roemer credits younger philosophers for “awakening him from his dogmatic slumber” (as Kant says of Hume): Arneson (1982) and Cohen (1982), advocating “responsibility” as the reason for accountability, as the alternative to other proposals they deemed “arbitrary”¹². In economics, however, there have for long been benefit-cost analyses of public projects which discard costs to individuals who are responsible for them.¹³

However, ancient and common as they are, these concepts still require carefulness in application. For instance, the definition of equality of opportunity is not just a question of “starting gate” (the distinction between parameters which should be equalized or compensated for and others): the main achievements of economics rest in the analysis of interdependent actions, and in the general case where my opportunity depends of your action, how do we define our having the same opportunities?¹⁴ Or again, since the issue is the allocation to the actor or the equal sharing of the effects of an action using means or in given circumstances,

¹⁰ See Kolm 1971, and 1985 for a discussion of the possible principles of the allocation of natural resources and their relation to equality.

¹¹ See section 11, and Kolm 1996a and b and especially 1997 and 2001.

¹² Namely, the notion of “capabilities” (that Sen proposed as an intermediate between welfare-utility and Rawls’s “primary goods” including income) which are in fact justifiable from the classical notion of basic needs, but which can often be freely formed by the concerned persons if they are provided sufficient income and information.

¹³ See Kolm (1970, English summary in 1976b, 1978). As a result, for example, much more was spent in safety to save a (marginal) life from a potential nuclear plant accident than as a traffic casualty thanks to road design, because the driver is usually more responsible for her accident than the people living near a nuclear plant are (they can move away but this can be very costly). The assignment of responsibility was straightforward because marginal conditions were determining and they present the required additive structure of the effects of the various causes.

¹⁴ Answers are proposed in Kolm 1993b, chap.3. Crucial concepts are the theories of Equal liberty potential (“if you did what I do, I could do what you can do”) which amounts to the symmetry (permutation-wise) of the set of possible actions of the individuals, and of symmetrical games (permuting individuals’ actions in pairs of individuals permutes their outcomes).

there are two orthogonal dimensions of the dichotomy for defining the starting gate: the assignment of means or circumstances, and that of the various parts into which the action can be divided. Then, each means or aspect of circumstances during each part of the action can be left to the benefit of the actor, or it can be submitted to equalization or compensation among the individuals. For instance, one may be entitled to the effects of one's enjoying capacities all the time and of one's productive capacities only for overwork beyond a benchmark labour. This distinction will turn out to be related to that between the concepts of desert and relative merit. Still another example of question is found in the essence of Roemer's essay, which is the use of two standards for rewarding effort: there is an ideal equality of output for equal effort, and the highest sum of outputs is sought. Moreover, effort is replaced by relative rank in one's circumstances, a convenient assumption whose justification is delicate. Finally, responsibility, desert, merit, accountability, entitlement, aim-freedom, and equality of opportunity are all related but crucially different concepts whose proper use is indispensable¹⁵.

1.4 Overview

The questions raised by Roemer's theory as regards equality of opportunity, responsibility, second-best egalitarianism, justice, Pareto efficiency, and strategic interaction, will lead to the investigation of the general structures of the problem and hence to proposals of solutions and of their application to local and global justice. We will start from Roemer's attractive simple formula for equality of opportunity: For individual outputs defined as anything which can be interpersonally compared and added, and are obtained by individuals' effort in various unequal circumstances, maximize the sum of the outputs which are each the lowest among the outputs in the same quantile of the distributions in their respective circumstances. The various

¹⁵ See Kolm 1970, 1982, 1984a, 1984b, 1985, and section 7.

assumptions and properties of the underlying theory are often more or less implicit, and they have to be reviewed to begin with (section 2).

This nice-looking and statistically rather operational social objective intends to give to each according to her responsibility in effort. One readily sees that it satisfies this intention if: (1) The criterion for treating unequally responsible individuals according to their responsibility can be taken to be the highest sum of individual outputs (which is also influenced by the allocation of policy instruments); (2) The relative rank of their output in their circumstances is what the individuals are responsible for; (3) The replacement of outputs in the same relative rank by the lowest of them is the best second-best for their equality. Moreover, (4) Effort is initially intended to be the object of responsibility, and its replacement by relative rank requires close consideration; (5) Relative rank is defined by a quantile, whose size – which influences the result – represents the coarseness of the policy's concern for responsibility rather than its intensity, and other formulations can grasp intensity; (6) The reaction or anticipation of the individuals with respect to the policy, and the corresponding strategic interaction, are not yet explicit while this influences the policy; (7) The highest sum is suboptimization if the output is sectorial (education and health are studied), and it is utilitarianism requiring justification if the output is “utility”; (8) The theory requires outputs which can meaningfully be added (this is generally not the case for utilities meaning happiness, in particular)¹⁶; (9) A number of the foregoing issues impair Pareto efficiency; (10) Even in its ideal form, the theory is not in general a theory of equality of opportunity since the individuals face *ex ante* different choices, except in particular applications such as “small individuals in large numbers” (which is the case in Roemer's applications); (11) The mention of the previous formal theories of equality of opportunity, desert, merit or responsibility would have helped situating the issues and solutions. Therefore, we are presented with a simple and practicable solution for important problems, which has its share of subtlety and in addition raises many interesting questions: who can ask for better?

One need not even “agree on the whole while disagreeing on each point” (as philosopher Lukacs said of Marx), since one merit of this theory is that its various aspects can be evaluated and, if necessary, replaced more or less independently, up to a point. Thus, this theory, *a priori* particular in various respects, can be generalized and secured, and

¹⁶ See Kolm 1993a and 1996a, chap.14 and 12.

alternatives can be proposed, in replacing or generalizing several of its special assumptions. The hypothesis that individuals in different circumstances have the same responsibility when they have the same relative rank in their respective circumstances, requires careful application and possibly other accompanying policy measures (section 3-1). Quantile size does not represent overall intensity of concern for responsibility (3-2). But one can consider general responsibility for effort (section 4). As a second-best for the equality of outputs obtained with the same effort, I propose that these outputs should in general be replaced, rather than by their minimum (Roemer), by another “*egalitarian equal-equivalent*”, such as a *generalized mean* (section 5-1). And, as an ethical maximand, the highest sum should generally be replaced by a more general form concerned with consequential distributive justice (section 5.2). The obtained overall more general form can in particular be a *mean of means* replacing the *sum of mins* (with “generalized means”); it has various possible specifications with particular moral and logical meanings (section 5.3 and 5.4), and the whole scheme encompasses a number of moral values (section 5.5). As a remarkable consequence of these forms, and of the relevant ethical measures of inequality, the *global inequality* in the outputs is *additively decomposable into inequalities due to effort and to circumstances*, with simple formulas for the main structures of the interaction between both (section 6). Various aspects of this discussion (the moral values implied by the general maximand, and the fact that Roemer’s form describes a particular desert, ideally rejects merit but in fact includes some of it, and does not *in general* describe equality of opportunity) will require a short analysis of the meanings and properties of the essential but quite different concepts of *responsibility*, *desert*, *merit*, *aim-freedom*, and *equality of opportunity*, along with a discussion of the notion of *effort* (section 7). This leads to the neighboring theory of relative *merit*, which is, in a sense, dual to that of desert, and which encompasses a number of meaningful specifications ; the various types of benchmarks, the association with desert, and the contrast between these two principles, are discussed (section 8). We will then note the issues of Pareto efficiency (whose importance is explained), of individuals’ reactions (or anticipations), and of suboptimization (section 9). *Genuine equality of opportunity* is then considered, with its logic, its equivalence with an apparently opposite well-known criterion, its variants, and its reasons (section 11). Finally, section 12 presents the *meritarian equality of opportunity*, which is Pareto efficient and, when applied to earned incomes, provides the global distributive justice which respects classical basic rights (which leads to the whole structure of justice in society).

2. The grounds of the theory: two-tier responsibility and approximate equalities.

Each individual benefits from an “output” (such as education, health, income, “utility”, etc.) determined by her action involving effort, her given “circumstances”, and a policy to be determined. Roemer advocates a policy objective which will shortly be closely discussed: maximize the sum of the lowest outputs each across the quantiles of same rank of the output distributions in each set of circumstances. This objective is remarkable. It is a simple formula computable from the distribution of individual outputs in each set of circumstances. It includes no specific consideration of individuals’ effort and of individuals’ reaction to the policy or anticipation of it or of interaction between both. These extremely convenient features have a real justification, but it will have to be closely considered. Moreover, this formula is provided a moral argumentation according to which it describes the widely held values of equality of opportunity and responsibility.

The ideal of the theory is that individuals equally responsible receive the same output, and, given these constraints or a strong second best for them, the policy maximizes the sum of outputs. On moral grounds, maximizing the sum is a classical consequentialist objective. Equal output for equal responsibility can be seen a deontic objective, not in the sense of duty of the agent but, on the contrary, of due to her (according to responsibility here). Maximizing the sum – the “*sum*” hypothesis – implies in particular that the outputs are measurable by a measure which can meaningfully be added.

Whatever the intrinsic value of the principle, it turns out to raise questions as concerns both concepts of equality of opportunity and of responsibility. Equality of opportunity is an ex ante equality of the possible choices of each individual separately, which the principle does not generally satisfy (this will be considered more precisely in section 10), though it often amounts to it for large populations (the case Roemer implicitly seems to consider).

As for responsibility, the question is the double standard used according as whether it is equal or not: the principle is ideally equal output for equal responsibility for effort, and it maximizes the sum for choosing these levels. The former is just a standard application of the logically necessary prima facie equality of equals in the relevant parameters¹⁷. The later is

¹⁷ See Kolm 1990, 1996a, and 1998a (foreword, section 5).

different. An individual who works twice as much as another may deserve receiving twice as much output (in a number of cases meaningful such measures can be found – not with relative rank or quantile, yet). More generally, desert for effort is a function which has some intrinsic structure (which can take account of the overall scarcity constraining the policy allocation – through aid or through output transfers when this is possible as with income). By contrast, maximizing the sum of outputs determines differently the relation between effort and individual output (there may not even be a function relating them if the policy and the people play a game). For instance, an individual who works little more than another will end up with a much larger output if their circumstances are such that a given increase in public aid produces more output if given to the former than to the latter. This possibility ideally vanishes for strict equality in efforts, but it exists in other cases. The individual then does not receive only according to her effort. She also receives according to the efficiency of her circumstances for using extra aid. She is rewarded for her contribution to maximizing the output thanks to her effort, and to circumstances and policy aid. And she is not responsible for the last two inputs. In particular, the effect of the policy is the policy's choice, not hers. Effort is the only criterion for the ideal equalities of outputs, but not for the rest of the chosen structure of outputs. For this rest, desert is a better concept than responsibility because it can denote reward for the painfulness of effort (rather than only for its free choice)¹⁸.

Moreover, in the principle of equal output for equal effort, both equalities are interpreted. On the one hand, equal effort is replaced by : in the quantile with same rank in the respective distributions of outputs with each set of circumstances. The individuals are assumed to be responsible for this situation of their output in the distribution of outputs in their circumstances – their “circumstantial output distribution” –, and only for that. This

¹⁸ Responsibility and desert can meet but are a priori quite different entities. Responsibility concerns the result of action (including inaction). It can be ex ante – and then a duty for future action–, or ex post, after the action. Responsibility ex post can be a condition for deserving blame or praise. It may also be a reason for deserving more “material” reward, punishment, entitlement, liability or accountability. But a useful act can elicit desert of a reward (possibly an entitlement in a consequence) because it is painful, even if it is imposed rather than freely chosen – which bans the possibility of a notion of responsibility. Desert then requires both some kind of usefulness and of painfulness. In this case, responsibility and desert invert the relative importance of the freedom of action and of the painfulness of effort. Responsibility requires free choice, and painfulness can only more or less exonerate from responsibility. On the other hand, someone forced to make a useful but painful act may deserve a compensation for this painfulness. However, desert can also focus on the free choice aspect of action, and then it is mainly concerned with the intensity of the willfulness (how hard one tries). This relates to the issue of painfulness by the possible implicit choice of enduring pain. Section 7 will come back on these essential concepts (“merit” will turn out to specifically *not* be the intended concept here).

hypothesis in fact divides in two. First, the individuals are responsible for the relative rank of their output in their specific circumstances, that is, their rank divided by the population in these circumstances – their “circumstantial relative rank”. This is the “*relative-rank responsibility*” hypothesis. Second, more specifically, what matters is in which corresponding “circumstantial quantile” their output is, a hypothesis which depends of the chosen size of the quantiles (the fraction they contain of the population in each set of circumstances). This is the “*quantile*” hypothesis. This hypothesis can describe two things. It can mean that the individual is responsible only for the circumstantial quantile in which her output is. But the length of the quantile interval may also describe a degree to which the policy actually cares for responsibility for effort, though in a particular way (if one considers only a single quantile, there is no longer a difference according to responsibility; a small number of quantiles means that the policy is satisfied with a rough approximation of what it sees as responsibility).

On the other hand, equal output (for equal circumstantial relative rank in the sense of in circumstantial quantiles of same rank) is transformed into the replacement, in the sum of outputs to be maximized, of each output by the lowest of the outputs in the quantiles of same rank in their respective circumstances. This is the “*min*” hypothesis. Then, since there is the same number of individuals in each quantile for each given type of circumstances, there is the same number of individuals with each given rank of their circumstantial quantile – and hence equally responsible for effort – in the whole. Therefore, the sum amounts to the noted maximization of the lowest incomes in each set of circumstantial quantiles of same rank.

In brief, there are n individuals and individual i has output y_i . The sum $\sum y_i$ is meaningful. A set of circumstances c affects the individuals, in number n_c , of the set N_c which will be called a “circumstance class” (an individual is in one and only one N_c). The circumstantial rank R of individual $i \in N_c$ is

$$R(i) = |\{j \in N_c : y_j < y_i\}| + 1.$$

Her circumstantial relative rank r is $r(i) = R(i)/n_c$. When the number of quantiles Q and the corresponding quantile interval are chosen, the circumstantial quantile rank q of this individual i is the integer $q(i)$ from 1 to Q such that

$$[q(i)-1]/Q \leq r(i) < q(i)/Q.$$

Let $N^q = \{i : q(i) = q\}$, the set of individuals in quantiles of rank q of their respective circumstance class. There are $n_c Q^{-1}$ of these individuals in circumstances c , and $n Q^{-1}$ in total

(for large numbers), the same number for each quantile rank q . Hence, the objective of the policy is to maximize

$$M = \sum_{q=1}^Q \min_{i \in N^q} y_i. \quad (1)$$

The maximand (1) becomes $\sum y_i$ if there is only one circumstance class and $Q = n$, or if the y_i for each $i \in N^q$ are equal (which can be the doing of the policy). It becomes $\min_i y_i$ if all individuals are reckoned in a unique quantile class ($Q = 1$).

The attractiveness of this formula rests, as much as in its clear-cut neatness, in the interesting questions it raises: Why the relative rank? Which quantile size and why? Why the min (presumably for avoiding “Pareto inefficiency”, but in each effort class, or over society)? Why the sum? Do the individuals react to the policy? Isn’t there suboptimization? Have the individuals the same set of opportunities for choice? Is responsibility manipulated for maximizing the sum still responsibility? Is it responsibility or desert (or merit)? Hence, the major aspects of this theory which should be considered are: the hypotheses of *relative-rank responsibility*, *quantile*, *minimum* as second-best egalitarianism, and *sum* for an additive maximand; the individuals’ consideration of the policy and the interaction between both; the suboptimization or utilitarianism and the question of their justification; Pareto efficiency or inefficiency; the issue of equality of opportunity.

Note that it may be that some circumstances are so much worse than the others that the lowest y_i for each $i \in N^q$ belongs to the same circumstance class N_c . This will tend to be the more frequent the more closely equal quantile corresponds to equal effort. Denote these circumstances as $c = \ell$. Then, the maximand becomes

$$M = \sum_{i \in N_\ell} y_i \quad (2)$$

if $Q = n_\ell$ and if this structure holds for all relevant values of the policy instruments.

The proposals for facing the various questions raised by this theory will each be presented along with or just after the presentation of the question. We shall begin with the basic structure of the theory, based on three elements: the responsibility for relative-rank and quantile, the “min”, and the sum. The answers to questions they raise lead to a new maximand aiming at equal-desert distributive justice. This maximand will permit the causal

decomposition of inequality in output into inequality due to effort and inequality due to circumstances (for each effort). An ethics of responsibility recommends diminishing the latter only.

3. Responsibility for relative rank and quantile: toward a justification.

3.1 Relative rank and responsibility

The finest (and possibly most puzzling) feature of the theory is its ideal of an equal output y_i for equal circumstantial relative rank of output $r(i) = r$. This statistical representation of responsibility is particularly convenient for applications. The stated intention, however, is to provide a theory of ideal equal output for equal effort for a reason of responsibility. If, given the policy, an individual's output depends only of her circumstances and her effort, and output increases with effort for given circumstances, then *for individuals in the same circumstances*, individual rankings in effort and in output coincide, and equality in effort and in circumstantial rank and relative rank of effort or of output coincide. However, for individuals in *different circumstances*, equal *circumstantial* relative rank r of output and of effort seems a priori to have no reason to correspond to equal effort. We shall see, however, that equality in circumstantial relative rank and in effort coincide if two conditions are satisfied. The gaps between reality and these conditions will show the degree of acceptability of the correspondence in these equalities. The conclusion will be that facts for one condition, and a cautious application of the correspondence for the other, can permit the acceptability of the correspondence. These conditions will respectively come from each determinant of actual and observed effort: its supply and its demand. The correspondence between equal circumstantial relative rank and equal effort means that the distribution of actual effort is the same in all circumstances.

The demand side provides the incentive to effort. This is precisely the reward function giving output as a function of effort in the individuals' circumstances and for the chosen policy. This demand does not depend of circumstances precisely when there is equal output for equal effort across circumstances, that is, when the ideal of the theory is achieved. Hence, as concerns the effect of demand on effort, the hypothesis which justifies the formulation assumes that the ideal objective is achieved. But this may not be the case in two respects. It is not when writing the objective maximand in general, before the choice of the policy that

maximizes it. And it may not even be at the optimum because the equality of output for equal effort, relative rank or quantile is replaced by the replacement of these outputs by their minimum in the maximand.

Effort provided also depends of its supply, that is, of the propensity for effort, which can be fully modelled in considering both effort and the reward of output. Folk sociology is prone to attribute to propensity what belongs to incentives, to call lazy the people who work little because their labor is paid little. The distribution of the propensity to effort may nevertheless depend of circumstances because of education, social influence and history, norms and traditions of subcultures (and possibly genes). Social effects of this kind are discussed by Roemer, who concludes that individuals are responsible for something else than their effort, and rightfully points out that these situations belong to individuals' circumstances. Indeed, such effects may have to be fought in the name of equality of opportunity. This can be done through policies of education, suasion, or compensation. However, such compensatory measures are not incorporated in the present model. Using resources for them would impair maximizing M (and trying to influence propensities to effort for maximizing M would a priori require different policies).

Yet, if this “sociological” policy is not needed or is carried on independently, the validity of the relative-rank hypothesis only depends of the incentive side, and this may make it acceptable with some caution¹⁹. Finally, the convenience of the relative-rank hypothesis is another possible reason for using it, though this should be accompanied by some reflexion about the possible resulting loss from optimality. Other aspects of the logic of the correspondence are closely analyzed by Fleurbaey (1995a) who ends up rather more pessimistic than the foregoing conclusion.

3.2 The moral of the quantile

¹⁹ We can also note that even when equal effort does not yield equal output, people tend both to work more in circumstances which yields lower output, for compensating, and to work less in circumstances which reward less higher effort, and circumstances usually rank similarly on these two scales (they cannot have the reverse ranking for all levels of effort): this tends to narrow down the differences between the incentive effects of various circumstances on effort, and hence also between the circumstantial distributions of effort, thus favoring the hypothesis.

Moreover, the ideal equality, and the replacement by the lowest output, are not only for the same relative rank, but also across outputs in the same quantile. The size of quantiles may just be statistical convenience. Roemer, however, suggests it can describe the intensity of the policy's concern for responsibility. But this raises a number of problems. The limiting case $Q=1$ means that the policy holds all individuals *equally responsible* for effort. It gives maximand (1) the form $M = \min_i y_i$. But this maximin stands for an ideal of equality which, in this philosophy, means more specifically that the individuals are held *not responsible at all* for their outputs. And the opposite case of full responsibility corresponds to an absence of policy intervention or "laissez-faire". With respect to quantile size, however, the opposite case of large Q can approximate the case where maximand (1) becomes $\sum y_i$, where no two individuals are held equally responsible (except when they happen to produce the same y_i with the same effort), but which does not mention the corresponding degree of individuals' responsibility. In intermediate quantile sizes, this size still does not concern the intensity of responsibility and, in addition, it does not describe the overall dispersion of assigned responsibility: it only describes the degree of clustering in responsibility (and polarization when $Q=2$). With responsibility decided by the policy, quantile size only describes the coarseness or thinness of the discrimination, but, down to $Q=2$, the concern for the differences in responsibilities can be very large. Explicit degrees of concern for the importance of the principle of equal output for equal effort will shortly be introduced.

4. Actual responsibility for effort

Assume then, for instance, actual responsibility for effort. Denote as N^x the set of individuals, in number n_x , considered as providing the same effort x – call it an "effort class". Then, if one keeps the rest of the theory, the maximand becomes

$$M = \sum_x n_x \min_{i \in N^x} y_i. \quad (3)$$

Again, this M becomes $\sum y_i$ if there is only one set of circumstances, and circumstances are defined so as to include all possibly relevant and different features of the individuals except their effort (hence the effect of the policy on two y_i with the same effort and circumstances cannot make them differ). And this M becomes $\min_i y_i$ if there is only one

effort class.

It will often occur that one set of circumstances, $c = m$, is worst than all others for the production of output y at each given level of effort. Indeed, it will even often occur that, for each given level of effort, the ranking of the outputs according to circumstances will be the same. For example, this is common for circumstances which define social classes, or more or less favored groups, or general ability, and outputs which are earnings, education, health, and so on. If, for all x , $\arg \min_{i \in N^x} y_i \in N_m$, and the fraction of individuals providing effort x is the same in circumstantial class m and in the whole population (which happens if the statistical distribution of effort is the same in all circumstances), maximand (3) simply becomes

$$M = \sum_{i \in N_m} y_i \quad (4)$$

if the noted structure holds for all relevant values of the policy instruments.

5. The theory of equal-desert distributive justice (jointly deontic and consequentialist justice).

The moral represented by objective (3) – and a fortiori (1) – can be transformed into one as simple but less simplistic and manicheist, and more realistic and justified. Both logic and ethic are involved. And both operations of these formulas, the min and the sum, are concerned, each for several reasons.

5.1 From min to mean

First, the min operation is inspired by the choice of maximin as *undominated second-best for an ideal of equality* (for instance for Pareto-efficient second-best egalitarianism in satisfaction with “practical justice”²⁰, or with Rawls’s (1971) “difference principle” for an index of “primary goods”). However, though interesting to consider as a borderline case, *maximin rarely is a good such second-best*²¹. Indeed, common *decreasing returns* are likely to make the increases of the lowest item close to its maximum very costly to others. The sum of the minima for defining the maximand (1) or (3) may attenuate the problem since it spreads the effort among these minima toward those where it produces most, in equating the costs of the

²⁰ The leximin in validly interpersonally comparable “fundamental preferences” (see Kolm 1971).

²¹ As noted in Kolm 1971.

last marginal increases. However, this spreading of the policy support of the outputs is limited to the minima; and it does not work among minima per effort which correspond to the same circumstances – a most common structure – if the policy intervenes globally on each set of circumstances more or less irrespective of users' efforts (also a common structure) since, then, there is no balanced distribution of support among these minima.

Another problem with the min is that maximands (1) and (3) are *not increasing functions of all outputs*, since they do not depend of the outputs which are not lowest among those resulting from the same effort.

A solution²² consists in replacing $\min_{i \in N^x} y_i$ by a summary of the y_i for $i \in N^x$ which is a notional output $y^x \in \mathfrak{R}$ function of these y_i , increasing with each of them and also when their distribution becomes more equal in some sense.

As a reminder²³, given an m -vector $t = \{t_i\} \in \mathfrak{R}^m$ and a function $\phi: \mathfrak{R}^m \rightarrow \mathfrak{R}$, the *equal-equivalent* of vector t for function ϕ is $E(t, \phi) \in \mathfrak{R}$ defined as, if e_m denotes a vector of m ones,

$$\phi[E(t, \phi) \cdot e_m] = \phi(t)$$

or, denoting as $\tilde{\phi}(\tau): \mathfrak{R} \rightarrow \mathfrak{R}$ the function defined by $\tilde{\phi}(\tau) = \phi(\tau e_m)$, $E(t, \phi) = \tilde{\phi}^{-1} \circ \phi(t)$. Function ϕ is defined up to an arbitrary monotonic function and can in particular be additively separable, that is, have an additive specification. It will be taken as non-decreasing, and increasing in one of its arguments at each point (hence function $\tilde{\phi}$ is monotonic and inversable). $E(t, \phi)$ is an *egalitarian equal-equivalent* when function ϕ increases when the t_i of t become more equal in some sense. Such a ϕ will be symmetrical and, among the possibilities, Schur-concave, or more specifically concave or quasi-concave (which comes to the same since ϕ is ordinal and from a known property). If function ϕ is symmetrical and additively separable, one of its specifications writes $\Sigma \varphi(t_i)$, and the corresponding equal-equivalent will be a symmetrical “generalized mean”²⁴ denoted as $E(t, \Sigma \varphi)$. A particular case is the average $\bar{t} = E(t, \Sigma)$. $E(t, \Sigma \varphi)$ is an egalitarian equal-equivalent when function φ is

²² Written for x but which Roemerians can replace with q .

²³ See Kolm 1966a.

²⁴ A more general mean would be $\varphi^{-1}[\Sigma q_i \varphi(t_i)]$ with $q_i > 0$ for all i and $\Sigma q_i = 1$. This mean is symmetrical when $q_i = 1/m$.

concave. A particular case is with a specification $\phi = \min t_i$ and $E(t, \min) = \min t_i$.

Then, the solution would be to take as each y^x an egalitarian equal-equivalent of y_x ,

$$y^x = E(y_x, \phi_x), \quad (5)$$

and in particular

$$y^x = E(y_x, \Sigma\phi) = \phi^{-1} [n_x^{-1} \Sigma\phi(y_i)] \quad (6)$$

with a concave function ϕ . The maximand then becomes

$$M = \Sigma n_x y^x, \quad (7)$$

with becomes, for the limiting cases, (3) for $y^x = \min_{i \in N^x} y_i$, and Σy_i for $y^x = \bar{y}_x$.

5.2 Not a sum

Second, in formulas (1) and (2), the sum Σ begs justification. Even when there is only one set of circumstances, why favor the highest sum over society? This idea is inspired by the case of goods that can be shared independently from their level. This is not the present situation: the global and the individual levels are jointly determined – and one cannot directly redistribute levels of health, education, happiness, and so on. Without further redistribution, the highest sum constitutes or implies a criterion of the distribution of individuals' outputs. Since, by logical necessity, a just distribution is an equality of the relevant individual-related items²⁵, the nature and meaning of a distributive principle is revealed by showing the equalizand (that which it explicitly or implicitly equalizes across individuals). A highest sum gives an equal value to alternative equal variations of individuals' outputs, whatever the output's level. But the issue is these levels, not notional alternative variations.

Hence, *maximizing the sum (without further redistribution of the outputs) has no reason to be considered "neutral", or more neutral than other criteria, with respect to distribution or distributive justice. Therefore, the foregoing maximands cannot be said to single out responsibility or desert as principle of distributive justice, excluding others. In*

²⁵ See note 17.

addition, the replacement of the y_i for $i \in N^q$ or $i \in N^x$ by the lowest or by y^x is justified by a principle of non-domination of the type of Pareto efficiency, or non-malevolence or benevolence (notably making the maximand M non-decreasing in the y_i), and this is also a specific moral value (see section 10). Hence, these maximands encompass three values (equal output for equal effort, highest sum or equal value of equal variations, and non-domination), rather than a single one. They can therefore be modified (or generalized) to include main other values. The most important will be consequential distributive justice for the y_i . This will also define “according to responsibility” for individuals in the measure of their efforts. The logically necessary value of prima facie equality in the relevant individual items leads one to choose a maximand intrinsically favoring a more equal distribution. This will be shown in the next section. This structure can also describe a special concern for the suffering or distressed, the poor, the sick, the untrained or uneducated, and so on (depending of the specific meaning of the outputs y_i), for reasons of justice, compassion, requirements of dignity, or basic rights of human beings and duties toward them, irrespective of the reasons for their misfortune. This will be taken into account along with responsibility for effort, but the very difficulty and uncertainty in delineating the scope of personal responsibility for effort, alluded to above, argue for caution in indictments of laziness, carelessness or imprudence: consequentialist justice can provide a rescue for people mistakenly held responsible for their misfortune. In addition, with respect to individuals’ contribution to the maximization through their efforts influenced by the policy, it is cogent that the individuals bear some responsibility for the relief of misery or for consequential justice.

Moreover, when the considered outputs y_i are not utility or income, they are sectorial goods (such as education or health). Their cost and the other goods also matter (see section 10). For income, the cost of labor or the value of leisure also matters. Boasting of the highest sum (or arithmetic average) of levels of education, health, etc., over society is not uncommon²⁶, but it is unjustified and fetishistic – and this objective is already jeopardized by the ideal equalization of outputs for each effort (in the foregoing maximands). And “utilities” that could meaningfully both be added and represent satisfaction or happiness for overall choices are yet to be found²⁷. However, sectorial justice is often demanded and is meaningful, provided it is introduced in the overall optimization (individuals’ preferences about society

²⁶ See for instance the statistics of the UNESCO and WHO.

²⁷ See Kolm 1993e; 1996a, chap.14 and 12; 2000.

may include this moral view)²⁸.

5.3 Equal-desert based distributive justice

Then, the values except equal output for equal effort can be represented by the maximization of a function of the y_i , $F:\mathfrak{R}^n \rightarrow \mathfrak{R}$. Benevolence, which will imply non-domination (of the Pareto type), makes F be an increasing function of the y_i . If y_i is the only relevant aspect of individual i , for all i , function F has to be symmetrical. Valuing lower inequality among the y_i can be described in the structure of function F . For instance, Schur concavity is classical²⁹, as is more specifically symmetrical quasi-concavity or concavity (which amount to the same since F is ordinal and from a known property). The ideal of equal output for equal effort is then introduced by the replacement, in the function $F(y)$ where $y = \{y_i\}$, of each y_i by y^x for $i \in N^x$ defined by equation (5). The maximand thus becomes, denoting as e_x a vector of n_x ones,

$$M = F(\{y^x e_x\}) \quad (8)$$

where each $y^x e_x$ is a vector of n_x times y^x .

In particular, function F can be additively separable, which amounts to

$$F(y) = \sum f(y_i) \quad (9)$$

with a concave increasing function $f:\mathfrak{R} \rightarrow \mathfrak{R}$. Then, maximand (6) becomes

$$M = \sum n_x f(y^x). \quad (10)$$

Since maximand M is only ordinal, form (10) amounts to a “generalized mean” with function f , which can be seen either as a symmetrical mean of the y_i , $f^{-1}[n^{-1}\sum f(y_i)]$, where each y_i is replaced by y^x for $i \in N^x$, or as a non-symmetrical mean of the y^x with weights $v_x = n_x/n$, $M = f^{-1}[\sum v_x f(y^x)]$. Then, if the y^x are themselves means, maximand M is a *mean of means*, by contrast with Roemer’s “sum of mins” which is the particular borderline case with f linear and $\varphi = \min$.

Particular limiting cases of functions F are the linear and the min form (a borderline

²⁸ See the analysis in Kolm 1996b, 2001. Max Weber and Michael Walzer (1983) have discursively emphasized ideal equalities in “spheres of justice” and Walzer discusses the smoothening of this ideal.

²⁹ See Kolm 1966a,b.

case where F is no longer increasing in all y_i) which give $M = \sum n_x y^x$ (form (7)) and $M = \min y^x$. When no function F or ϕ_x is a “min”, maximand (6) is an increasing function of each y_i . When functions F and all ϕ_x are “min”, $M = \min_i y_i$. If they all are linear, $M = \sum y_i$.

5.4 Polar forms

In the case of additively decomposable functions ϕ_x or F , the functions $f(\eta)$ or $\varphi(\eta)$ can notably be of the forms, α and γ being constants: power η^α with $\alpha < 1$ or $\log \eta$, exponential $-e^{-\alpha\eta}$ with $\alpha > 0$, or output-augmented power $(\eta+\gamma)^\alpha$ with $\gamma > 0$ and $\alpha < 1$ which provides both the “compromise” and “intermediate” forms between the former ones, which all have well-known properties as concerns social ethics, justice and inequalities³⁰. This applies to all the foregoing uses of functions F and ϕ_x and to analogous functions and uses to be obtained in sections 6 and 8.

5.5 Moral meanings

With a maximand defined as (8) with (5), the deontic ideal of equal outcome for equal effort will be expressed by the fact that, in a sense, functions ϕ_x express more preference for equality than function F does. If, for example, function F had the form $F(y) = \phi[\{\phi_x(y_x)\}]$ for the functions ϕ_x used in formula (5) and any function ϕ , then, from forms (8) and (5), $M = F(y)$ and there is no preference for equal output for equal effort. For additively separable functions F (form (9)) and ϕ_x (form (6)), this corresponds to $f = a\varphi + b$ with constant a and b , which amount to $f = \varphi$ (if $a > 0$) since functions f and φ are cardinal, and to $f''/f' = \varphi''/\varphi'$ if they are twice differentiable; then $M = \sum f(y_i)$. The required condition for additively separable functions F and ϕ_x (forms (9) and (6)), is that the function $\varphi \circ f^{-1}$ is strictly concave, or, with the required differentiability, φ'/φ' is a decreasing function, or $\varphi''/\varphi' < f''/f'$ almost everywhere (one can then say that function φ is uniformly more concave than function f).

In the end, the maximand considered encompasses three classes of moral values which are arranged in an order of priority. First, it is an increasing function of all y_i . This entails that

³⁰ See Kolm 1966a, 1966b, 1976, 1996a, 1996c, 1999a.

the chosen state is undominated in these variables, Pareto efficient if they are utilities. Second, the maximand rather strongly favors more equal individual outputs for individuals who provide the same effort. This is a moral of responsibility or immanent desert from effort (see section 7). Third, the maximand may favor, for other reasons just noted, more equality in individual outputs. Hence in all cases the implicit moral is plurivalued. This is, indeed, the general and unavoidable case. A moral stand is a constellation of values, never a single one, and the task of moral analysis is precisely to adjust or balance various values.

6. Inequality as the sum of inequalities due to circumstances and to effort.

6.1 Sources and forms of inequalities

Inequality in individuals' output depends of inequalities in both individuals' efforts and in given circumstances more or less corrected by the policy. A reduction of inequalities that respects the choices of individuals, or holds them responsible for their effort, entitled to its product or deserving it, will want to reduce output inequalities due to unequal given circumstances but not those that result from unequal efforts. How, however, can it disentangle the inequalities due to these two causes which are joint inputs of the output? It turns out that the foregoing evaluation functions, defined by forms (5) and (8), answer this question with the most meaningful measures of ethical inequality. Then, indeed, the inequality in outputs is additively decomposable into inequalities due to factors of various types: it is the sum of inequalities due to effort and inequalities due to circumstances for each effort (the sums are unweighted or weighted depending of the chosen type of measure of inequality).

These measures are the evaluation-consistent measures of inequality³¹. They are the deficit, with respect to the average, of an egalitarian equal-equivalent of the distribution, defined with an appropriate evaluation function. Indeed, both are equal if the distribution is equal or if the evaluation function only cares for the sum or the average, and, for an egalitarian equal-equivalent, the deficit is positive if the distribution is unequal. With some m -vector of y_i , $y \in \mathfrak{R}^m$, and an adequate evaluation function $H(y)$, denote $\bar{\bar{y}} = E(y, H)$ and $\bar{y} = m^{-1} \sum y_i$. Then, $\bar{\bar{y}} = \bar{y}$ if the y_i are all equal, and $\bar{\bar{y}} < \bar{y}$ otherwise. The *evaluation-*

³¹ See Kolm 1966a.

consistent measures of inequality are the *absolute*, *relative* and *total* forms respectively defined as

$$I^a = \bar{y} - \bar{\bar{y}},$$

$$I^r = I^a / \bar{y} = 1 - (\bar{\bar{y}} / \bar{y}),$$

$$I^t = m I^a.$$

In a given problem, one or several of these forms can be meaningful. In any form, the inequality is defined by a set of y_i and an appropriate evaluation function.

6.2 The intrinsic decomposition

We then consider three such measures, with their respective vectors (sets of variables whose inequality is considered) and evaluation functions. The upper index again denotes the form (*a*, *r* or *t*).

1) *Global inequality* is defined for the vector y and the evaluation function $G(y)$ defined by form (8) with each number y^x , function of the vector y_x , defined by formula (5). The average and the equal equivalent are $\bar{y}_g = \bar{y}$ and $\bar{\bar{y}}_g$ defined by $G(y) = G(\bar{\bar{y}}_g e)$ where e is a vector of n ones. Then, the absolute inequality is $I_g^a = \bar{y}_g - \bar{\bar{y}}_g = \bar{y} - \bar{\bar{y}}_g$.

2) *Inequality due to effort* is defined for the n -dimensional vector $\{y^x e_x\}$ obtained from y in replacing each y_i by y^x for $i \in N^x$, where y^x is defined by formula (5), and for the evaluation function of this vector defined by formulas (8) and (5). The average is $\bar{y}_e = \sum v_x y^x$ where $v_x = n_x/n$. The equal equivalent $\bar{\bar{y}}_e$ is defined by $F(\{y^x e_x\}) = F(\bar{\bar{y}}_e e)$. The absolute inequality is $I_e^a = \bar{y}_e - \bar{\bar{y}}_e$.

3) *Inequality due to circumstances* when producing effort x is defined for vector y_x and evaluation function ϕ_x (formula (5)). This function indeed represents by definition the relevant inequality aversion for the dispersion of the y_i for $i \in N^x$. The average then is \bar{y}_x , the equal equivalent is y^x , and the absolute inequality is $I_x^a = \bar{y}_x - y^x$.

The crucial result is:

Lemma: $\bar{\bar{y}}_g = \bar{\bar{y}}_e$.

Proof:

From the definitions of \bar{y}_e , \bar{y}_g and $G(y)$,

$$F(\bar{y}_e e) = F(\{y^x e_x\}) = G(y) = G(\bar{y}_g e).$$

Moreover, if $y_i = \eta$ for all i , $y^x = \eta$ and $G(\eta e) = F(\{\eta e_x\}) = F(\eta e)$. Therefore,

$$F(\bar{y}_e e) = G(\bar{y}_g e) = F(\bar{y}_g e).$$

Hence $\bar{y}_e = \bar{y}_g$ since F is an increasing function.

Then, since $\bar{y} = \sum v_x \bar{y}_x$,

$$I_g^a - I_e^a = \bar{y}_g - \bar{y}_e = \bar{y} - \sum v_x y^x = \sum v_x I_x^a,$$

hence $I_g^t = I_e^t + \sum I_x^t$. Moreover,

$$\bar{y}_e = \sum v_x y^x \leq \sum v_x \bar{y}_x = \bar{y}$$

since $\bar{y}_x \geq y^x$ for all x . Finally, denoting $\eta_x = n_x \bar{y}_x / n \bar{y}$ the share of total output produced with effort x , the relations between inequalities, for each of the three forms, are as follows.

Proposition

$$I_g^t = I_e^t + \sum I_x^t,$$

$$I_g^a = I_e^a + \sum v_x I_x^a,$$

$$I_g^r = (\bar{y}_e / \bar{y}) I_e^r + \sum \eta_x I_x^r \leq I_e^r + \sum \eta_x I_x^r.$$

Note that $I_g^r = I_e^r$ if $I_x^r = 0$ for all x , since this implies $y^x = \bar{y}_x$ for all x and hence $\bar{y}_e = \bar{y}$.

6.3 Forms with basic relations between efforts and circumstances

A general egalitarian ethic will prefer lower I_g (I_g^r, I_g^a or I_g^t), while a responsibility egalitarian ethic will not care for the I_e (I_e^r, I_e^a or I_e^t), but will want to reduce what it deems to be the only unjust inequality, the remaining sum forms: $I_{unjust} = \sum I_x^t, \sum v_x I_x^a$ or $\sum \eta_x I_x^r$. Then, the ϕ_x will be taken additive $\phi_x = \sum \phi$. The choice of function ϕ can be affected by

considerations of convenience, one remaining adequate parameter being generally sufficient for describing the aversion to inequality. The two polar cases are those where the relation between the effects of effort and of circumstances is additive – for instance earned and unearned income –, and multiplicative – for instance labor and wage rates which may result from education. Then, if x_i and z_i respectively denote the effects of effort and of circumstances for individual i , $y_i = z_i x_i$ or $y_i = x_i + z_i$. Denote $z_x = \{z_i\}_{i \in N^x}$. In the multiplicative former case, the choice of a power $\varphi = \eta^\alpha$ with $\alpha < 1$ or logarithmic $\varphi = \log \eta$ gives $I_x^r = I_{z_x}^r$ and $I_x^a = \bar{y}_x I_{z_x}^r$ with $\bar{y}_x = x \bar{z}_x$. In the additive latter case, the choice of an exponential $\varphi = -e^{-\alpha \eta}$ with $\alpha > 0$ gives $I_x^a = I_{z_x}^a$ and $I_x^r = I_{z_x}^a / \bar{y}_x$ ³². This permits easy computations of the unjust inequalities as seen by a responsabilist ethic

If we have $\phi_x(y_x) = \min_{i \in N^x} y_i = y_x^m$ (Roemer's egalitarian second best if we had $x = q$),

then $I_x^a = \bar{y}_x - y_x^m$ and $I_x^r = 1 - y_x^m / \bar{y}_x$, which are limiting cases of both previous cases and satisfy both corresponding properties.

7. The relevant concepts and their meanings: responsibility, desert, merit, effort, etc.

Moral principles of allocation which are or can be related to action include *responsibility*, *desert*, *deservingness*, *merit*, *aim-freedom*, and *entitlement*, *accountability*, *liability* and *claim*. They are related to one another in various ways, but are also generally quite different. Distinguishing among them is essential for many reasons (an example is that – it will turn out – merit and aim-freedom can secure Pareto efficiency while desert and responsibility generally impair it). Using terms of this kind in violation of their meaning in the language is not only gross; it also leads to confused thinking and irrelevant questions, and to posing problems which can only lead to dead ends. More important, the only way of understanding the corresponding issues, and of finding the solutions to the problems they raise, cannot but begin with an analysis of the meaning of these terms in the practice of language (so-called “common” language, but the analysis of legal discourse may also help). We shall present the basic properties of these concepts without providing examples for gaining space (the reader can easily imagine examples).

³² For both cases, see Kolm 1966a.

A principle of allocation says what should be attributed to whom, or/and taken away from whom, if such and such facts prevail. Our topic, here, concerns the cases where an agent's action both defines the fact and creates what is to be obtained or compensated for. We shall briefly see the main characteristics of each principle, the relations between the principles, the comparisons according to each characteristic, and the structure and effects of the concept of effort. We shall then focus on a crucial difference between desert and merit, for showing the theory of merit in the next section.

Entitlement and *accountability* are two general terms, applicable to action but of much more general use (as with *liability* and *claim*). A main difference rests in their "polarity": one is entitled to something good and accountable for something bad or for something not being good enough (positive and negative polarity, respectively). As a consequence, they can amount to the same in taking two different viewpoints or benchmarks.

Aim-freedom means that the agent is entitled to the (intended) consequences of her action and receives the corresponding benefit. The problem raised by consequences influenced by several agents is solved when there is free agreement between them for the sharing (possibly including voluntary compensations). This is the only term used here whose nature is "technical" rather than "natural" – that is, belonging to a "natural language"³³.

Responsibility is a moral attribute of an agent, derived from the value of the consequences of her action. It is defined for an agent and a domain of her actions. Ex ante, it

³³ An action is a set of acts using means for an aim (or several aims). Hence, there can be *act-freedom* (freedom to act), *aim-freedom* (as defined), and *means* or means-freedom. Act-freedom plus aim-freedom constitutes *process-freedom*. Advocating universal process-freedom is *process-liberalism*, the central social ethics of modernity (instances of it are Locke's intuition, or – as some would say – a "libertarianism" morally bound to respect classical basic rights implied by act-freedom, or Nozick's (1974) description, but its close analysis shows that it may require rather large public sectors and redistributions, though specific ones) – see the presentation of the liberal theory in Kolm 1985 (also 1996a). Marc Fleurbaey's (1995a, 1998) "natural reward" seems to refer to aim-freedom with means including full self-ownership of one's own capacities (which was indeed called the "natural" allocation of these capacities). This expression sounds well because this is a "natural right" in the classical and historical sense of the term. But it raises three or four problems. The topic is a *right* rather than a "reward" which suggests it is granted by someone. Moreover, what about other means used by the individual for obtaining her output? Are they allowed or not, and if yes, which ones? In fact, the individual can also have aim-freedom with a lump-sum liability concerning the rent of her productive capacities (Kolm 2001 and section 11). Finally, the term "natural" is historical, but not that "natural" in itself (it is not unnatural that I should help my neighbour), and one may also object to its implicit praise – though this also applies to "freedom".

entails a duty derived from the value of the consequences of the actions. Ex post, this value can entail blame or praise, and possibly punishment or reward, accountability or entitlement, or liability or right. The great humanistic morals hold us responsible for a vast domain of possible improvements of the world (maximal for Sartre, large for Jonas). By contrast, responsibility studied here is individuals' responsibility for their own situation (possibly the "natural responsibility" by analogy with the classical "natural rights" – though there is nothing unnatural in my being responsible for your welfare)³⁴. Responsibility can be for an action or for the lack of it ("by omission or commission"). Being defined for an action which is by definition freely chosen, it requires possibility. It can also be under condition of information (which one may be responsible for acquiring) and, possibly, of cost or painfulness of the action.

Desert, deservingness and *merit* can justify retribution for action. Desert, deservingness and the verbs deserve or serve can be positive or negative, that is, they can justify reward or punishment. Positive desert may be applicable to other justifying facts than actions, such as painfulness of acts even if they are not free (and hence are not acts of an action in the classical sense), or, more loosely, needs, while deservingness seems restricted to actions. Merit is a positive concept justified by action in its present-day use. Desert and merit are "immanent" when the reward, or the penalty for negative desert, are inherent consequences of the action. Indeed, the reward or penalty can also be established ad hoc by a moral evaluator. Moreover, in merit, but not in desert, the agent may be entitled to, or accountable for, the effects of some of her own given characteristics which influence the effects of her action. For instance, I may merit the effects of my actions using my given capacities, though I a priori do not deserve these capacities and their effects. This distinction between desert and merit fits with elaborate analyses of merit such as Vlastos's (1962) and is noted by many authors such as Lucas (1993, noted by Roemer) and Pojman and McLeod (1999). It is crucial for distributive justice.

Effort considered here will be a characteristic of action (which is taken to be voluntary as in the classical theory of action)³⁵. Effort is not a unitary concept. It has three characteristics: intensity of action, intensity of the will, and some sort of painfulness of the

³⁴ In the context of the line of discussion including Roemer's work, Fleurbaey (1995a) has emphasized the moral limitation of individual responsibility for self-harm (at least under risk).

³⁵ This excludes forced, compulsive, impulsive or reflex acts. The unconscious will not be discussed here (see Kolm 1982, 1987).

willful action. Intensity of action can refer to physical force, mental concentration, or duration (except when it is specifically distinguished) – previous training and formation has sometimes to be added. Intensity of the will distinguishes casualness from determination. Painfulness includes any costliness for the actor³⁶. Hence, effort is intentional painful intensity of the agent's action. The various allocative principles considered here relate differently to effort. Aim-freedom refers only to action, not to effort. The same holds for responsibility with the qualification that the painfulness of an effort which would have been entailed by a different course of action may diminish the responsibility for the actual action. Desert directly induced by action attaches to the intensity of the will. It a priori does not require painfulness of the action. However, this painfulness may in itself be a reason for deserving some compensation. Merit seems to require painfulness (as revealed by the expression “she has no merit in it”), and it tends to depend on the intensity of the action; it a priori entitles the individual to the effects of her capacities which transform willpower into powerful action. Note that the notion of labour usually implies some painfulness as compared to its absence, leisure.

This family of allocative concepts thus constitutes a rich and varied set of related criteria. They differ according to several characteristics. Some are positive (aim-freedom, merit) and others can be both positive and negative (desert, responsibility). They can consider only action, or also its intensity, that of its driving willfulness, its painfulness, or the capacities it uses.

In particular, with merit and aim-freedom the agent is entitled to the effects of some of her given characteristics on the consequences of her action (or accountable for their deficiencies, for instance as compared with other agents), while this is not the case for desert. The case of accountability from responsibility depends on its specification (handicaps limiting a better action or making it costly are reasons for more or less exoneration from responsibility, but known circumstances of any kind – including those attached to the individual – which make the effect of the action more harmful are in general not). With merit

³⁶ One may of course find, in addition, some intrinsic pleasure in effort.

and aim-freedom, the delineation between given characteristics whose effects one is entitled to (or accountable for) and the others is subject to specification. But modernity has had its specific rule: one is entitled to the effects of one's given capacities but not to those of one's social situation at birth (different from bequest). This is the basis of the classical liberal theory which adds the essential time dimension, and makes precise the effects of exchange and property rights. This also results from the basic Declarations of rights where a ban on social discrimination, privileges, nepotism, and so on, accompanies the principle of "the career open to talents" (the 1789 Declaration is a little more devious when it justifies inequalities by "social utility"). This delineation has been the most common sense of the slogan "equality of opportunity" (see section 11). It also is implied by the use of the term "meritocracy" which does not only ban rights from birth: it is the rule by the able and intelligent, not by the deserving hard-working but possibly dumb toilers. The use of the term merit by the translators of Plato and Aristotle also reveals self-entitlement to some of one's circumstances, and these doubtlessly include capacities. However, the important influence of the family in formation and education makes this delineation between social situation from birth and "natural" endowment still uncertain. Moreover, we will see that the delineation can also be made by the definition of the parts of actions which entail, or not, self-ownership of their use of given capacities or other circumstances (sections 8 and 12).

Finally, the concepts of responsibility and aim-freedom are the basis of one of the major families of theories of social ethics and justice for the last four centuries (at least): the theories of the social contract. A social contract is a putative responsibility. Rights, duties, entitlements and accountabilities are determined as resulting from a hypothetical unanimous free collective agreement, and their moral status results from individuals' responsibility in this agreement³⁷.

³⁷ A general meta theory of social contracts can be found in Kolm 1985, chap.22 (see also a summary in 1996a, chap.3). This putative responsibility and aim-freedom also applies to modern theories such as: the reason for the compensation and surplus principles in benefit-cost analysis (implement the project if there are possible transfers which would make it unanimously accepted or desired), theories of the "original position" (Rawls 1971), the "liberal social contract" (see Kolm 1985), and theories of the "partially original position" (see section 13, note 72).

8. Meritarian egalitarianisms

8.1 Merit and relative merit.

We have seen desert-respecting social maximands and the difference between desert and merit. What is the corresponding theory of merit, is merit consistent with some social maximands ? The characteristic property is that merit entitles the agent with the effect of circumstances on the product of her action, while desert does not. Then, *full merit* entails an absence of intervention, in particular of attempt to erase or attenuate the effects of differences in circumstances, that is, it demands *laissez-faire*. There is not even an ethical maximand. For instance, if the considered circumstances include individual capacities, this is full self-ownership, which implies the classical “right in the full product of one’s labor” (supported by both Locke and Marx).

However, the policy can both have some respect for individuals’ merits, and care about the effects of circumstances, possibly regretting unjust inequalities in circumstances. Indeed, the policy may think that if, given the circumstances (and the policy), individual i in circumstances c_i chooses to work x_i providing output $y_i=g(c_i, x_i)$ rather than $x'_i < x_i$ providing output $y'_i=g(c_i, x'_i)$, she is entitled to the difference $y_i - y'_i$. This implies that, as far as individual i is concerned, the policy only considers influencing some potential level \tilde{y}_i of her y_i , not directly dependent on the y_i and x_i chosen by this person, and it feels no responsibility about the differences $y_i - \tilde{y}_i$ individual i manages to obtain in working x_i (this \tilde{y}_i corresponds to an effort \tilde{x}_i such that $\tilde{y}_i=g(c_i, \tilde{x}_i)$). Then, in its maximand $M=F(y)$, the policy replaces each y_i by \tilde{y}_i . Since the only variables concerning individual i are c_i , x_i and y_i , and \tilde{y}_i does not directly depend on x_i and y_i by hypothesis, the only variable concerning individual i that \tilde{y}_i can depend on is her type of circumstances c_i . Hence, individuals in the same circumstances $c_i=c$ have the same $\tilde{y}_i=y^c$. Then, if e_c denotes a vector of n_c ones and $y^c e_c$ a vector of n_c numbers y^c , the replacement of each y_i by y^c for $c=c_i$ in function F provides the new maximand

$$M=F(\{y^c e_c\}). \quad (11)$$

Output y^c corresponds to effort x^c defined by $y^c = g(c, x^c)$. Output y^c and effort x^c are output and effort *representative* of circumstances c for the policy. They also are circumstantial *entitlement* or *accountability benchmarks* in the sense that the policy may care for influencing them, but not the differences $y_i - y^c$ for $i \in N_c$ which are fully left to each individual i 's responsibility, with the implication that she is entitled to it if $y_i > y^c$ or accountable for $y^c - y_i$ if $y_i < y^c$, that is, she is entitled to, or accountable for, the effect that the effort differential $x_i - x^c$ can provide in circumstances c . The policy abides, in this sense, by the *relative merit* of the individuals. For instance, the x^c and y^c are often the average or the smallest, by circumstances or overall, or some given reference effort.

The comparison between maximands (8) and (11) shows that, and in what sense, *merit is the dual of desert*.

Responsibility and entitlement or accountability should be carefully distinguished. Individual i is responsible for the choice of her effort x_i . Hence, given c_i and the policy, she is responsible for her output y_i . The policy, however, chooses $\tilde{y}_i (= y^c$ for $c_i = c$) and is actively concerned with these variables only. It thus deems the individual responsible for the deviation $y_i - \tilde{y}_i$, and, for this reason, entitled to it if $y_i > \tilde{y}_i$ or accountable for it if $y_i < \tilde{y}_i$. The difference $y_i - \tilde{y}_i$ also generally depends on c_i and on the policy. The policy, however, disregards these effects in her choice, treating them with “benign neglect”. This is partial or relative *laissez-faire*. The individuals are entitled to the benefits they can derive from these effects in using them by their effort $x_i > \tilde{x}_i$ (or accountable for their failure to do this if they work $x_i < \tilde{x}_i$)³⁸. As for \tilde{y}_i , the individual is not entitled to it from her effort x_i ; the policy grants it for another reason which can refer to entitlement or not. Note that in the important application to global distributive justice in “macrojustice” (section 11), the difference $y_i - \tilde{y}_i$ does not depend on the policy but only on individual i 's productive capacities (and all the \tilde{y}_i are equal)³⁹.

Function F will be symmetrical if only their effort and circumstances distinguish the

³⁸ This seems to correspond to what Fleurbaey (1998) calls “responsibility by delegation”. Yet, individual i is responsible for her choice of x_i , and for her use of the effects of c_i and of the policy on the function $g(c_i, x_i)$ for obtaining $y_i - \tilde{y}_i$, but of course not for the existence of these effects as a potentiality. She only is entitled to use this availability and to the benefits she manages to derive from it (she is assumed to merit these benefits).

³⁹ See Kolm (1966b, 1991b, 1993c, 1993d, 1996a, 1996b), Maniquet (1998).

individuals. It will a priori be non-decreasing and increasing in one of its arguments at each point. Favoring more equal outputs is described by a structure of the function F such as Schur-concavity, or concavity (amounting to quasi-concavity). Particular forms of (11) will be, with an additively separable function F , say $F(y)=\sum f(y_i)$ with a concave function f , $M=\sum n_c f(y^c)$, and the limiting cases with $F(y)=\sum y_i$ and $F(y)=\min y_i$, $M=\sum n_c y^c$ and $M=\min y^c$. The most meaningful structures of function $f(\eta)$ are η^α with $\alpha < 1$, $\log \eta$, $-e^{-\alpha\eta}$ with $\alpha > 0$, $(\eta + \eta_0)^\alpha$ with $\alpha > 0$ and a constant η_0 .

8.2 Circumstantial benchmarks and representatives

8.2.1 The cases

The task of the meritarian policy is twofold: choose a definition for the y^c , and then maximize M . If the y^c are exogenously given, there is nothing to maximize, and the situation amounts to full merit (which is, more to the point, $y^c=0$ for all c). If all the y^c are equal, say $y^c = \tilde{y}$ for all c , then, if F is non-decreasing and is increasing in at least one y_i , \tilde{y} can be taken as maximand M since function F is ordinal. Then, the policy objective is fully determined by the choice of \tilde{y} . This permits all possible cases, but it shuns the consideration of the y^c for dealing with the ethical differentiation of different circumstances – our present concern. However, if equal y^c shun the present question, this is not the case of equal effort benchmarks x^c , say $x^c = \tilde{x}$ for all c , since, then, the $y^c = g(c, \tilde{x})$ depend of c , and of the policy through function g . This can thus be a solution even if \tilde{x} is a priori given.

The benchmark-representative y^c or x^c can be either independent of the actual x_i or y_i chosen by the individuals, and then they are called *objective* (or given), or they can depend of them, and then they are called *endogenous*. The x^c , or the y^c , can be the same for all c or not, and these solutions are respectively referred to as *homogeneous*, *uniform* or the case of *equality* on the one hand, and *heterogeneous* or the case of *inequality* on the other hand. Finally, the reference benchmarks can be *outputs* y^c or *efforts* x^c . These constitute three alternative choices for these benchmarks. Given or equal y^c have been set aside. Equal benchmarks should thus be efforts $x^c = \tilde{x}$ for all c , and there corresponds “equal-effort output benchmarks” $y^c = g(c, \tilde{x})$. Objective benchmarks can only refer to given x^c . Endogenous benchmarks include three cases: homogeneous (equal) x^c and heterogeneous x^c and y^c .

A major difference between objective and endogenous benchmarks is that with the latter, but *not* with the former, the policy is based on x_i and y_i chosen by the individuals, which tends to produce Pareto-inefficient disincentives and a game-type situation between the policy and the individuals.

8.2.2. Objective uniform effort benchmarks

The case of an objective uniform effort benchmark, $x^c = \tilde{x}$ for all c , provides objective equal-effort output benchmarks $y^c = g(c, \tilde{x})$ which depend of the policy influencing function g . If zero effort $x=0$ is defined and $g(c,0)=0$ whatever c and the policy, $\tilde{x} = 0$ corresponds to full merit (constant y^c) and to an absence of policy. The individuals then fully benefit, or suffer, from the circumstances they happen to have or to be in. The opposite case of very high \tilde{x} , say \hat{x} , would make more equal y^c conversely tend to discriminate against people in a priori favorable circumstances. Indeed, an individual in circumstances c choosing effort $x < \hat{x}$ loses output $g(c, \hat{x}) - g(c, x)$ from the highest $g(c, \hat{x})$. This loss is the higher, the more productive circumstances c are for an increase in labor (effort) from x to \hat{x} . And if the $g(c, \hat{x})$ tend to be equal for all c , $g(c, x)$ for a $x < \hat{x}$ is the lower, the more productive c is for this increase in labor. However, this possible injustice tends to be less than the symmetrical one in full merit when there are decreasing returns in output production $g(c, x)$ ⁴⁰. At any rate, the reference effort \tilde{x} will be chosen in between these two extreme cases. This choice can rely on the abundant analysis about it in the case where the y^c are equal.⁴¹

8.2.3 Endogenous benchmarks or representatives

Relevant endogenous benchmarks will directly choose the x^c , the y^c , or $\tilde{x} = x^c$ for all c , as

⁴⁰ Many cases are possible, depending on the comparative structures of the functions $g(c, x)$ of x for the various c . It is for instance possible that the same people are advantaged, or disadvantaged, for very low and very high effort benchmarks \tilde{x} . In the particular case of direct transfers of output, individuals uniformly more or less productive than others for any given variation in effort, and maximal $\tilde{x} = \hat{x}$, the foregoing remark leads to Dworkin's (1981) "slavery of the talented" (see section 11).

⁴¹ See Kolm 1997, 2001.

functions of the corresponding x_i or y_i , namely, denoting $X=\{x_i\}$ and $x_c=\{x_i\}_{i \in N_c}$, as functions $x^c(x_c)$, $y^c(y_c)$ or $\tilde{x}(X)$. These functions will be chosen from the consideration that they provide benchmarks or representative, and that the corresponding y^c are arguments of the maximand (11). These functions can refer to levels such as average, minimum or more general egalitarian equal-equivalent, or to rank such as median or – again – minimum. Measurement of the x_i required for the expressions used will be assumed (for instance a quantity of labor possibly measured by its duration, possibly qualified for intensity or previous learning or training). The choice of rank for y^c and x^c correspond since the function $y^c=g(c,x^c)$ is increasing in x^c , while this is not the case for averages if function $g(c,x)$ is not affine in x , or for more general equal-equivalents.⁴²

Let us denote as \bar{t}, t^M and t^m respectively the *average* of a vector $t=\{t_i\}$, and the *median* and the *lowest* of its components t_i . Then, a priori interesting solutions are, for all c , $x^c=x_c^M$ and $y^c=y_c^M$, $x^c=x_c^m$ and $y^c=y_c^m$, $x^c=\bar{x}_c$, $y^c=\bar{y}_c$, and $x^c=\bar{X}, X^M$ or X^m . From the benchmark point of view, each individual $i \in N_c$ is entitled to (or accountable for) the deviation of her output from her circumstantial average \bar{y}_c or median y_c^M , or from $g(c, \bar{x}_c)$, $g(c, \bar{X})$ or $g(c, X^M)$; or she is entitled to (or accountable for) the effects of the difference of her effort (labor, action, choice) with effort benchmarks x_c^M (which amounts to $y_{i-} y_c^M$), \bar{x} , or uniform \bar{X} or X^M . Or again, this individual is entitled to what she obtains above the minimum in her circumstances y_c^m which corresponds to the lowest effort or labor x_c^m , or to what she can obtain in working more than the general lowest X^m .

Taking an egalitarian equal-equivalent $y^c=E(y_c, \Psi_c)$ (with Schur-concave or concave Ψ_c), and in particular $y^c=E(y_c, \Sigma\psi)$ (with a concave ψ), has two possible reasons. This can be a way of choosing a benchmark y^c in between the borderline \bar{y}_c and y_c^m . But this can also describe a consequentialist preference for lower output inequality in each set of circumstances c . In some cases, indeed, people are particularly concerned with intra-circumstances

⁴² If the distribution of effort is the same in all the considered circumstances, then $x^c(x_c)=\tilde{x}$, the same for all c , if this x^c means to be a representative “per person”. This relates to the discussion in section 3. But even if the propensities to effort tend to this independence, the incentives to effort $g(c,x)$ will a priori differ across circumstances. However, their levels will be brought closer to one another if benchmarks y^c are. Yet, there will remain the effects of differences in x_i . These may also be attenuated if the y_i for each $i \in N_c$ are also brought closer to one another as it will be noted.

differences, possible along with a particular sense of solidarity among people in the same circumstances. Then, if function F is additively decomposable, maximand (13) amounts to a *mean of means*. Function $\psi(\eta)$ can notably have the particularly meaningful forms η^α with $\alpha < 1$, $\log \eta$, $-e^{-\alpha\eta}$ with $\alpha > 0$, and $(\eta + \eta_0)^\alpha$ with $\alpha > 0$ and a constant η_0 . The limiting cases for such $y^c = E(y_c, \Psi_c)$ are $y^c = \bar{y}_c$ (no longer “egalitarian”) and $y^c = y_c^m$ (no longer increasing in all y_i for $i \in N_c$). Minimum y_c^m is the most egalitarian case if M should be non-decreasing in the y_i . All these cases combine with the possible cases for the structure of function F .

Limiting cases obtain with averages and minima for these endogenous benchmarks-representatives and function F . If $F = \bar{y}$ and $y^c = \bar{y}_c$ for all c , $M = \bar{y}$ or Σy_i . If $F = y^m$ and $y^c = y_c^m$ for all c , $M = y^m = \min y_i$. If $F = \bar{y}$ and $y^c = y_c^m$ for all c , $M = \Sigma n_c y_c^m$, which is dual to form (3). If $F = y^m$ and $y^c = \bar{y}_c$ for all c , $M = \min \bar{y}_c$.

Two of the foregoing cases have been used (to the author’s knowledge). Roemer (1993) and Van de gaer (1993) use respectively, as M , $\min g(c, x^M)$ and $\Sigma (\bar{y}_c)^\alpha$ (and in particular $\min \bar{y}_c$), that is, a maximin in outputs for the median uniform effort benchmark, and a power mean of average output circumstantial benchmarks (and in particular a maximin in these benchmarks). Both use these forms in an extensive study of the problems they consider.

Consider the case of an additively separable function F , say $F(y) = \Sigma f(y_i)$, and $y^c = E(y_c, \Sigma \psi)$ for all c – the case of a “mean of means”. If inequality-aversion is the same overall and in each set of circumstances, $\psi = f$ (or, equivalently, $\psi = af + b$ with constant a and b), and $M = F(y)$. Inequality being more offensive within the people in the same circumstances corresponds to a concave function $\psi \circ f^{-1}$. If only these inequalities were offensive, f would be linear and $F = \Sigma n_c y^c$, the most extreme case being with $y^c = y_c^m$. Inequality being more offensive overall than within each circumstantial class corresponds to function $f \circ \psi^{-1}$ being concave. The limiting case is with $y^c = \bar{y}_c$ and hence $M = \Sigma n_c f(\bar{y}_c)$, the most extreme case being $M = \min \bar{y}_c$ (Van de gaer’s cases with an exponential function f).

The formal (dual) analogy between the theory of desert and that of relative merit with endogenous benchmarks permits one to derive properties of the latter as it has been done for the former. One of the most important properties is the additive decomposition of the relevant inequality in the outputs into the inequality due to circumstances and the inequality due to effort, the latter being itself additively decomposed into inequalities due to effort in each circumstances.

8.3 Both desert and merit

The comparison of forms (6) and (13) shows that desert and merit are in general incompatible principles. These forms coincide for all y and all functions $g(c, x)$ only when F is additively separable, say $F(y)=\sum f(y_i)$, and $y^x=E(y_x, \Sigma\varphi)$, $y^c=E(y_c, \Sigma\psi)$, and $\varphi=\psi=f$ (up to affine transformations). Then, however, $M=\sum f(y_i)$, and both desert and merit vanish.

However, with particular – though notable – output structures, there can be other cases of coincidence of desert and merit, with different underlying evaluation functions F . For instance, desert or responsibility with form (3) of section 4 and relative merit with $M=\min \bar{y}_c$ amount to the same in the conditions which make form (3) become (4): for each effort x and all relevant policies, the lowest y_i obtains with the same circumstances $c = m$ (a frequent case), and the same fraction of individuals provide each effort x in circumstantial class m and in the whole population (discussed in section 3 and note). Then, indeed, $\bar{y}_m = \min \bar{y}_c$ and the announced equivalence holds since n_m is constant.

Moreover, the most general case is that of situations where both desert and merit are relevant, but about different items. For instance, individuals may merit the effects of their intelligence or strength but not that of their social class environment. The grounds for such an allocation could be concepts of “natural rights”, or of the “self” which would include brain, muscles and their effects, and would have to be “respected” through this choice of merit. This can describe “meritocracy” and “the career open to talents”. The theory of such cases is easily built in applying *successively*, to the outcomes y_i , the transformations described in sections 5 and 8-1. For instance, if c_1 and c_2 respectively denote unjust circumstances and circumstances which can legitimately enhance the effect of effort, individual output is $\eta = g(c_1, c_2, x)$. First, the y_i for individuals with the same c_2 and who provide the same effort x will be replaced, in

the maximand function $F(y)$, by a number $\gamma(c_2, x)$ which is the higher the lower the inequality among these y_i , such as an egalitarian equal-equivalent of these y_i , notably a generalized mean, possibly the lowest. Second, each $\gamma(c_2, x)$ is replaced by a relative-merit benchmark or representative γ_{c_2} , as previously discussed. All the foregoing discussions can be used for such cases. In particular, in this example, the relevant output inequality will be the sum of inequalities respectively due to effort, legitimate circumstantial differences, and unjust differences in circumstances. For example, with a meritocratic ethic and individual i 's income $y_i = w_i x_i + u_i$, where x_i is chosen labor, w_i the wage rate due to productive capacities, and u_i unearned income, the responsible individual may merit (or relatively so) her capacities and hence her w_i but not her unearned income (possibly inherited). Then, the two-stage theory applies (with the functions ϕ and ψ appropriate for these additive and multiplicative structures noted in section 6).

8.4 The dual mixes of deontic or resourcist, and consequentialist, ethics

The theory of ethics rests on the opposition of two types of principles: consequentialist and deontic. Deontic, which refers to the agent's duty in the ethics of action, has to refer, in the ethics of allocation, to the person's rights in what is due to her because it is attached to her action or to her self, or as an equal sharing of resources. In real life, both types of principles commonly are jointly present and interfering. Their combination is a basic question of ethical analysis. In general, both objectives will have to retreat to a second-best. But this can be done according to two types of structures epitomized by the foregoing formalizations of the concepts of desert and of relative merit. In these models, deontism is the "resourcist" ideal equalization of the effects of circumstances either for each effort (desert) or for the circumstantial benchmark-representative (relative merit), and the meritarian entitlement to the effects of deviations from benchmarks. The second-best deontic or resourcist equalization is obtained here by the replacement of the variables ideally equalized by an egalitarian equal-equivalent of these variables. The two structures of combination depend of whether the consequentialist concern is applied after (desert) or before (relative merit) this deontic-resourcist equalization.

In the "desert" case, the egalitarian equal-equivalent across circumstances for effort x is $y^x = E(y_x, \phi_x)$. The ϕ_x for various x should correspond, while they have different numbers n_x

of arguments. They will thus be additive forms $\phi_x = \Sigma \phi$ with the same function ϕ for all x , and hence the y^x are generalized means $y^x = E(y_x, \Sigma \phi)$. Then, the overall maximand is $F(\{y^x e_x\})$.

In the “relative merit” case, let us consider the case where the circumstantial concern for each c summarizes y_c into $y^c = E(y_c, \Psi_c)$. As previously, since the Ψ_c should correspond across c while the number of their arguments n_c differ, we shall have $\Psi_c = \Sigma \psi$ with the same function ψ for all c , and hence $y^c = E(y_c, \Sigma \psi)$. Then, the overall maximand is $G(\{y^c e_c\})$.

If there is only one c , the circumstantial and overall consequential maximands y^c and F should coincide, and hence a specification of F should be $\Sigma \psi(y_i)$. If there is only one effort x , maximand G should coincide with the diminishing of inter-circumstantial inequality described by y^x , and hence one specification of the ordinal G should be $\Sigma \phi(y_i)$.

Finally, we obtain two possible overall maximands:

$$D = \Sigma n_x \psi(y^x) = \Sigma n_x \psi \circ \phi^{-1} \left[n_x^{-1} \sum_{i \in N^x} \phi(y_i) \right] \quad (12)$$

$$R = \Sigma n_c \phi(y^c) = \Sigma n_c \phi \circ \psi^{-1} \left[n_c^{-1} \sum_{i \in N_c} \psi(y_i) \right] \quad (13)$$

Moreover, these two solutions can be compared by the respective equal-equivalent incomes of the whole distribution, which are the relevant generalized means of the y^x and y^c respectively (with $v_c = n_c/n$),

$$d = \psi^{-1}(n^{-1}D) = \psi^{-1} \circ \Sigma v_x \psi \circ \phi^{-1} \left[n_x^{-1} \sum_{i \in N^x} \phi(y_i) \right] \quad (12')$$

$$r = \phi^{-1}(n^{-1}R) = \phi^{-1} \circ \Sigma v_c \phi \circ \psi^{-1} \left[n_c^{-1} \sum_{i \in N_c} \psi(y_i) \right]. \quad (13')$$

Income d is the *desert equivalent income*, and income r the *merit equivalent income*, of the distribution, with *deontic (resourcist)-egalitarian* function ϕ and *consequentialist* function ψ . Their basic relation is $d \leq r$ if function $\phi \circ \psi^{-1}$ is concave, that is, if function ψ is no less concave than function ϕ . And $d < r$ if function $\phi \circ \psi^{-1}$ is strictly concave (function ϕ is more concave than function ψ) and the y_i are equal neither in each set of circumstances nor for each effort. Similar relations hold in inverting d and r , and ϕ and ψ . The reason is that, for

instance, d first strongly “ φ -equalizes” for each x into the y^x which it then more weakly ψ -equalizes, while r performs the strongest φ -equalization only on the more weakly equalizing means y^c . Moreover, denoting as $Y=\Sigma y_i$ and $\bar{y}=Y/n$ total and average output, $d \leq \bar{y}$ and $r \leq \bar{y}$ if φ and ψ are concave, and $d < \bar{y}$ and $r < \bar{y}$ if they are concave and either φ is strictly and the y_i are not all equal for each x , or ψ is strictly and the y_i are not all equal for each c .

Then, there result overall absolute, relative and total desert-based (index d) and merit-based (index r) inequalities $I_d^a = \bar{y} - d$, $I_d^r = 1 - d / \bar{y}$, $I_d^t = nI_d^a = YI_d^r$ and $I_r^a = \bar{y} - r$, $I_r^r = 1 - r / \bar{y}$, $I_r^t = nI_r^a = YI_r^r$. The decomposition of these inequalities according to their factors of effort and circumstances can be done as in section 6.

With a linear ψ and a φ corresponding to the minimum, (12) and (13) respectively give Roemer’s (1996) and Van de gaer’s (1993) cases, at least if quantile can replace effort for the former, and with in addition the case of a power function φ for the latter.⁴³ Someone who, on the contrary, cares only but maximally for outcome justice will choose a linear φ and a ψ corresponding to the minimum, and method (12) or (13) according as she cares for such justice overall or in each set of circumstances. The relevance of the choice of functions φ and ψ and methods (12) or (13) – or other merit benchmarks – depend of the specific situation.

9. Individuals’ choices, suboptimizations, inefficiencies

9.1 People’s choices and inefficiencies

A meritarian policy with objective benchmarks is not concerned with individuals’ choices of x_i and y_i . One consequence will be that it induces no Pareto inefficiency through distortive inducements of individuals’ actions (it only has a kind of income effect on individuals). This

⁴³ If an individual is uncertain about her future actions or efforts x , c denotes her circumstances including the features that determine the specific structure of her utility function, and $g(c, x)$ is a von Neuman-Morgenstern specification of this utility, then \bar{y}_c is this individual’s expected utility (with a proper definition of the risky event and its probability), and $\Sigma\psi(\bar{y}_c)$ with a concave ψ is a social evaluation function favoring equality if these utility functions are interpersonally comparable. The policy can influence some parameters of a such as income, education, health, etc. This can constitute another justification of an aggregation of the type of Van de gaer. This is a particular case of the principle of partial self-ascription (Kolm 1998b, see also note 72).

independence is not the case with a policy concerned with responsibility or desert from action (or merit with endogenous benchmarks). The essential point is that assignment according to responsibility is not any accountability or entitlement. By nature, its reference is not given characteristics but individuals' actions (including possible "inaction") and their effects. Now, individuals are concerned with the policy, and this will in general affect their choices and actions (the x_i and hence the y_i). Hence, a priori one cannot avoid explicitly considering this interaction. A number of game-theoretic solutions can occur. It will notably depend of the structure of the interaction such as its being one-shot or two-shot or a repeated or more durable relation, the exchanges of information and the possibility of binding agreements, and so on. There may be a Stackelberg-like situation dominated by either the policy or the individuals (as with "moral hazard"), or, possibly, some kind of Cournot-Nash equilibrium, with probably more efficient outcomes if the game is repeated or sequential and the relation more durable⁴⁴.

Moreover, when the y_i are not "utilities", the maximization is a suboptimization. For instance, in Roemer's pet model, about education, optimization should consider the funding of education policy and the effects of education on individuals' earnings (which are the effect of education considered by this author). And when the y_i are utilities, then, as we noted, no concept where they mean levels of happiness or satisfaction permits a meaningful addition in general⁴⁵. The additive maximand (1) or (3) thus is a priori either inefficient or meaningless.

Hence, the described "responsibilist" policies are Pareto inefficient for a number of reasons: the maximand depends on elastic variables y_i ; solutions such as Stackelberg or Cournot-Nash are inefficient in this sense; for sectorial variables y_i (education, health, etc.), there is suboptimization – and "eudemonistic" utilities cannot meaningfully be added in general. Roemer discusses efficiency as being the highest Σy_i for sectorial variables (such as education): this is bound to surprise economists.

⁴⁴ The only interaction Roemer discusses is individuals' attempts to distort information about their circumstances.

⁴⁵ See Kolm 1996a, chap.14 and 12. The highest sum of such utilities can have logical and ethical meaningfulness in the small, for local optimization.

9.2 Why Pareto-efficiency?

Is, however, Pareto efficiency a justified moral requirement? This cannot be asserted unthoughtfully, especially when the logical requirement of prima facie equality is taken into account⁴⁶. However, the answer probably is positive for several reasons of various natures. (1) *Equality*: Pareto efficiency is itself one kind of equality; it is equal veto power on changing from the considered state to another one. (2) *Benevolence with preferences or happiness*: There probably is *some* value in the standard “intuition” referring to preferences, or more tangible satisfaction, or still more specific happiness or welfare, along with benevolence or non-malevolence. (3) *Social freedom*: If a possible state is unanimously preferred to the achieved one (with possible indifference for some persons), this reveals that an avoidable constraint is at work, whatever its nature, and hence this constitutes a violation of a social freedom. (4) *Political with basic rights*: The classical basic rights include both a political right to vote and a right to be a candidate to positions; hence, if a state is not Pareto-efficient, a political candidate can propose a program which is preferred by everyone (with some possible indifferences) and win by the unanimity of the votes; thus, Pareto inefficiency tends to require a violation of classical basic rights. (5) *Epistemic*: If there exists a state *A* that everybody finds better than state *B*, for all possible reasons jointly (and with some possible indifferences), then the idea that *B* is better than *A* does not exist in society while the converse one does, this idea cannot sincerely be expressed, and hence the idea that such a state *B* can be the best of all just cannot exist (note that both of us are among these individuals – as Pascal said, we are all on board; the whole society has no external observer).

However, maximands such as (6) can be completed and integrated in the relevant model, taking account of the various costs, individuals’ interactions with the policy, and other goods. In particular, the a priori inefficiency of sectorial egalitarianism is considered by the theory of second-best efficient multidimensional egalitarianism⁴⁷, and preferences for such equalities may have to be explicitly taken into account.

⁴⁶ See note 12.

⁴⁷ See Kolm 1996b.

10. Equality of opportunity

10.1 *Not equality of opportunity*

In the present framework, individuals face the same opportunities when all can obtain the same output when they choose to exert the same effort. This is not in general the case with Roemer's theory for three reasons, one of which is intrinsic to the concept. The two other reasons have already been noted. We have already seen the question of replacing equal effort by being in the same circumstantial relative rank or quantile (section 3). Moreover, individuals with the same relative rank or quantile do not receive the same output (and the same doubtlessly holds for individuals who actually provide the same effort): a tendency toward this equalization is provided by the fact that only the lowest of their output is written in the maximand; but, then, only the sum of these lowest is maximized, which weakens the maximin effect. Furthermore, and more specifically, even if *all individuals who provide the same effort received the same output*, this would *not describe equality of opportunity*. The reason rests on two aspects of the concept of equality of opportunity: opportunity is an *ex ante* concept in the sense that it is faced by the individual before her choice; and its equality refers to a possibility for individuals choosing by themselves, in a way not a priori tied to some others' actions. Then, if several individuals who provide the same effort decide to provide another same effort (again the same for all), and the theory's policy is applied in both cases, they would again receive the same output. However, if an individual decides alone to provide another effort, the new output she receives generally depends of who she is, of the specificities of herself and of the set of the others. This holds whatever the others' simultaneous choices, in particular their reaction to this choice or to its anticipation, and when the policy maximizing M is applied in both cases (this would also hold if it were not). These individual specificities are circumstances in Roemer's model, and, hence, even in the ideal form of this model (equal output for individuals who provide the same effort and adequate representation of effort), the individuals' sets of opportunity of effort-outcome pairs a priori depend on their circumstances. Opportunity is an *ex ante* concept, before the choice, and the individuals do not generally have the same opportunities, even if, *ex post*, it turns out that those who provide the same effort receive the same output. The principle of equal output for individuals who actually provide the same effort is implied by equal opportunities in effort-output pairs, but the converse is not. This converse, however, may hold in particular applications, notably with a "large number of small individuals", which certainly is the case in

a number of applications Roemer has in mind. Yet, even in this case equality of opportunity fails if social effects make groups of people providing the same effort jointly change behavior. In brief, equality of opportunity, concerned with individuals' *ex ante* possibilities rather than with their *ex post* situation, is a theory of freedom rather than a theory of output or welfare.

10.2 The structures of equality of opportunity

Moreover, though equality of opportunity is always an *ex ante* concept, it is not always equal output for equal (possible) effort. It often is equal opportunity to use one's particular means – notably capacities – in a given situation, and these means may differ from one agent to the other. The distinction parallels that previously discussed between desert and merit. The distinction between the means or handicaps whose effects the individuals are entitled to or accountable for and those whose effects should be even out can be of two possible types: by their nature, and by the actions or parts of action that use them (or suffer from a handicap). However, we shall shortly see that this case of equality of opportunity can be formally reduced to the former one of equal domain of choice by the appropriate notional transformation of individuals' preferences (the “sour grapes” transformation by which an individual is assumed to dislike – i.e., never to prefer - what she cannot have)⁴⁸. Another essential distinction is that there are two basic types of reasons for equality of opportunity, according as whether it is a simple criterion of allocative justice of the outcomes, or the corresponding freedom is also attributed other values, which can be for a number of specific reasons⁴⁹. This close consideration of actual equality of opportunity will reveal that it amounts to, and justifies, well-known structures of distributive justice.

10.3 Equality of opportunity as equity or as realistic equity

The most standard equality of opportunity is that all individuals face the same choice. We shall see how different *a priori* entitlements or liabilities can be formally reduced to this case. Consider that individual *i* applying effort x_i obtains output y_i , with application of the policy. Denote as $z_i=(x_i,y_i)$. Equality of opportunity will mean that each of the considered individuals *i* can choose her z_i (in choosing x_i) in the same opportunity set Z for each. This implies that

⁴⁸ See Kolm 1971 (the concept of “realistic equity”), 1991a, 1999b.

⁴⁹ See Kolm 1996a, chap.2.

this set Z for an i does not depend on the z_j for other individuals $j \neq i$,⁵⁰ and that individuals' choices satisfy $z_i R_i z_j$ for all i, j where R_i denotes individual i 's weak preference over her situation z_i (for all i , $z_i \in Z$ and $z_i R_i z$ for all $z \in Z$ from individual i 's choice according to her preferences, hence $z_i R_i z_j$ for all i, j). That is, equality of opportunity is "equitable" in this classical specific sense (the more recent name "no-envy" has an advantage of specificity but is problematic since "envy" generally describes an externality which is absent here, though both concepts can be related)⁵¹. Conversely, if a set of z_i , one for each i , is so "equitable" with preferences R_i which do not depend of the domain of choice, it can result from equality of opportunity since the set constituted by the unassigned z_i is a possible such Z . Hence, equality of opportunity amounts to this "equity", in this sense. This is the relevant criterion when opportunity sets are desired only for what they permit the agent to obtain, as corresponding means or instruments: Equity is instrumental equality of opportunity. The set Z , of course, is determined or influenced by the policy⁵².

This equality of opportunity is the concept of justice corresponding to the individuals being entitled to, or accountable for, their choice in their opportunity set and only for that. Indeed, this corresponds to the opportunity sets being the object of direct distributive justice and hence to the requirement of their ideal identity⁵³. This entitlement/accountability of choice can be justified from holding either that the individual is responsible for this free choice or that this choice is a private matter for her (the individual could be held responsible for her preferences only in the measure in which she has formed or could change them)⁵⁴.

The structure of these preferences R_i of the individuals entails their specific choices in their identical given domains. These choices are both what the individuals are entitled to or accountable for, and what differs across them. Hence, if the individuals face other limitations

⁵⁰ For an extension of the concept to the case where there are such influences, see note 14.

⁵¹ See Kolm 1995.

⁵² See Kolm 1971, 1973, 1991b, 1993a, 1993b, etc. Roemer indeed values opportunity sets solely for what they permit the individuals to obtain. It thus is intriguing that he has been the most eager critic of this principle of "equity" (even when so presented as equality of opportunity)

⁵³ See note 17.

⁵⁴ The absence of contradiction in the fact that given preferences can determine free choice rests in the definition of the concept of freedom as "caused by the will", or by "reason", will and reason being psychological – and physiological – processes (see Kolm 1982, 1984b). The issue thus not is a "metaphysical" question about "free will", but a moral question about why value the effects of particular psychological processes. Here come notions of dignity, of the rationality of impartiality and reciprocity associated with the tautology of "willing what one wants" (if I want that what I shall want be satisfied, I value my freedom, and hence I have to value others'), and so on.

they are accountable for, or possibilities or means they are entitled to, which a priori differ from one to the other, associating them with the preferences R_i still leaves identical individual sets of constraints in the remaining category. This kind of equal opportunities can still be related to the principle of “equity”. This can be done in two alternative manners respectively using the concepts of “realistic equity” and of “sour grapes preferences”. *Realistic equity* says that “no individual prefers another allocation that she can have to her own”. Then, an allocation is realistically equitable if and only if there exist identical remaining constraints which would induce the individuals to choose this allocation⁵⁵. *Sour grapes preferences* are notional individual preferences derived from the actual ones in replacing each preference relation between a possible choice and an impossible one by a preference for the former (the “sour grapes transformation of preferences”). Then, a realistically equitable allocation is equitable with the sour grapes preferences. These concepts, with a priori entitlements, are of course meritocratic equality of opportunities.

Of course, other criteria should generally be added to equity for choosing either one of the several equitable states, or a second-best equitable state when equity – perhaps along with other desired criteria – is not possible. The most relevant of these other criteria extend the concept of potential equality of opportunity – or potential equal freedom – which amounts to equity into (potentially) no less free, less free and freer⁵⁶. In particular, individual i with allocation z_i is (potentially) *no less free* than individual j with allocation z_j if there exist one domain of choice for each, Z_i and Z_j , such that $Z_i \supseteq Z_j$ and z_i is a best element of Z_i for R_i and z_j a best element of Z_j for R_j . The other concepts and properties derive from this one (less free is no “no less free”, and i is freer than j if it is no less free than her and j is less free than i). In particular, for two allocations of the same individual z_i and z'_i , z_i is no less free than z'_i amounts to $z_i R_i z'_i$ and z_i is freer than z'_i amounts to $z_i P_i z'_i$ (i.e., $z_i R_i z'_i$ and no $z'_i R_i z_i$). Hence, in particular, the equivalent of Pareto efficiency with this freedom comparison amounts to classical Pareto-efficiency. When this property is required and no equitable allocation is possible, it can be shown that the individuals are structured into a hierarchy of classes of equally free individuals such that each individual is no less free than those of her class and of lower classes. This structure permits the definition of a series of second-best efficient maximins in freedom.

⁵⁵ Kolm, 1971 (see also 1991a, 1996a, 1999).

⁵⁶ The theory of the comparison of instrumental opportunities alluded to here is developed in Kolm 1993a and 1999b.

The most standard uses of a notion of equality of opportunity apply this concept for banning inequalities in social situations (social relations, nepotism, discrimination, information about possibilities) and to opportunities for or from education. They most often exclude the uses of given personal capacities, that is, the individuals are considered entitled to this use of their own capacities ; this is a standard meaning of the concept of merit, and the corresponding equality of opportunity will be specifically considered in section 11 (where, however, the use of capacities is distinguished from the sharing of the rent provided by their availability).

10.4 The two moral reasons for equality of opportunity.

Equality of opportunity results from the rational necessity of prima facie equality applied to the objects of direct justice evaluation⁵⁷. However, freedom is valued for a dozen of different possible reasons⁵⁸. One of them only is the value of the resulting choice it enables the agent to obtain. For the others, the actual domain of possibilities generally matters. However, the given determinants of individuals' domains of possible choices generally differ across individuals (circumstances, possibly given productive capacities). Then, if the individuals are not a priori entitled to, or accountable for, some of these unequal determinants, a policy that equalizes the corresponding domains of individuals' possible choices has to forbid some actual possibilities. The result is bound to be Pareto-inefficient. However, the principle of relative merit, replacing that of desert, offers solutions which can provide both an equalization of the values of circumstances and Pareto-efficient free choices (with objective benchmarks). An example is provided by the particularly important case of individuals' different productive capacities.

⁵⁷ See note 17.

⁵⁸ See Kolm 1996a, chap.2.

11. The efficient meritocratic equality of opportunity

For avoiding sectorial suboptimization, take as outcome individuals' incomes from labor (this is the effect of education that Roemer considers), and aggregate effort at school with later effort at work, and educational circumstances with the later job circumstances. Individual i , with effort or labour x_i , earns $f_i(x_i)$ ⁵⁹. The function f_i considered here will be essentially due to given capacities to earn and learn. Individual i 's disposable income or consumption is y_i . Hence, there are two relevant goods: the y_i and the x_i (or the complementary lower effort). A meritocratic concept of equality of opportunity will provide all individuals with the same relevant "action-output starting gate" or benchmark which is a pair (x^o, y^o) , and leave them free to use their capacities to earn more in working more, or to work less at the cost of losing the foregone earnings. This is one classical structure of equality of opportunity, based on a *two-tier or dual equality: equal right to use* one's (generally unequal) capacities to deviate from an *equal guaranteed benchmark* allocation (equal "starting gate"). Hence, all individuals receives the same income y^o if they provides the same effort x^o , and, if individual i chooses to work x_i , she receives disposable income y_i such that

$$y_i - y^o = f_i(x_i) - f_i(x^o).$$

With a closed economy, total production is total consumption, that is, $\Sigma y_i = \Sigma f_i(x_i)$, and hence $ny^o = \Sigma f_i(x^o)$ or $y^o = \bar{f}(x^o)$ where $\bar{f}(x^o) = n^{-1} \Sigma f_i(x^o)$. Hence,

$$y_i = f_i(x_i) + t_i$$

where

$$t_i = \bar{f}(x^o) - f_i(x^o)$$

is a net income transfer (a subsidy to individual i if $t_i > 0$ and a tax of $-t_i$ if $t_i < 0$), with $\Sigma t_i = 0$.⁶⁰ This also means that each individual i is demanded her possible product for labor x^o , $f_i(x^o)$, and is handed out the average $\bar{f}(x^o)$ in exchange. Individuals' productivities (the functions f_i) are generally different; the effects of these differences are erased for the

⁵⁹ Involuntary unemployment can be accounted for here in taking $f_i(x_i)$ be what the individual can obtain when she offers labor x_i . Full involuntary unemployment of individual i is then described by $f_i(x_i) = 0$ for all supply of labor x_i . Partial involuntary unemployment imposing the constraint $x_i \leq \tilde{x}_i$ to individual i is described by the truncation of the function $f_i(x_i)$ to $f_i(\tilde{x}_i)$ for $x_i > \tilde{x}_i$. This will imply, for fully or partially involuntarily unemployed persons, a final disposable income equal to the average $\bar{f}(x^o) = (1/n) \Sigma f_i(x^o)$ for benchmark labour x^o .

⁶⁰ See references in note 28.

benchmark (x^o, y^o) ; but the individuals remain entitled to or accountable for the effects of their own productivities for deviations from the benchmark – which will generally mean for their effort in excess of the benchmark effort x^o for the levels of x^o we will want to choose.

This scheme amounts to leaving each individual free to use her capacities and to receive all the product, while equalizing the potential outputs $f_i(x^o)$ for the same “equalization labour” x^o . The former property – free use of capacities and full benefit from this use – is probably the most faithful interpretation of the classical basic rights which require process-freedom from given resources (these rights are constitutional in democratic countries). The latter property is an equalization of the value (the rent) of these capacities which transform labor or leisure into income-consumption or, equivalently, lower income into higher leisure, and have a priori to be measured with a mix of these two goods. Individuals’ self-ownership of their “eudemonistic” capacities to derive satisfaction is certainly also implied by these rights (and is justifiable by free choice and the intimacy of consumption and pleasure). Hence, basic rights probably require this scheme of “equal-labour income equalization” for global distributive justice in “macrojustice”, hence for replacing present-day income taxes and main supports to low earnings. Of course, other criteria will have to be used for specific purposes in the innumerable cases of public or private “microjustice” (or “mesojustice” in broad fields where income and the market may not suffice as with aspects of education, health or culture).

This policy is a case of equality of opportunity with relative merit with objective benchmark, considered in section 8.3; the particular output, income, is directly transferable, which permits the full equalization of output for effort x^o , as $y^o = f_i(x^o) + t_i = \bar{f}(x^o)$. This would be full merit if the chosen x^o represents zero effort, with, for all i , $f_i(x^o) = \bar{f}(x^o) = t_i = 0$ and $y_i = f_i(x_i)$, that is, full self-ownership. But x^o can be much higher. One can in fact have $x_i < x^o$, which means that individual i can “buy” a saving in effort $x^o - x_i$ at the cost of foregone income $y^o - y_i$. Merit (and Pareto efficiency) generally prevent that individuals have equal output y_i for equal effort x_i for all possible efforts; but this rule can hold for one possible effort x^o .

This policy does not depend of individuals’ choices. It need not know them and takes no care of their reaction. It induces no distortionary disincentive and Pareto-inefficiency⁶¹. Its

⁶¹ In an economy where labor is mostly wage labor (or can be compared to it), a fiscal authority can at least as easily know the wage rates (and hence the functions f_i) than total incomes earned (this is the

equal sharing of the proceeds of the same notional equalization labour x^o also amounts to each individual yielding to each other an equal share of her “equalization income” $f_i(x^o)$, $(1/n)f_i(x^o)$: this *equality of opportunity is general balanced reciprocity* in this sense. The higher x^o , the more the scheme favors individuals with circumstances or productivities lower than average and the less it favors those in the opposite situation. The equalization labor x^o represents a degree of income equalization, solidarity, reciprocity, and resource communitarianism. It is the degree to which this society constitutes an economic patrimonial community. This aspect is crucial in its determination⁶².

This important case exemplifies the bidimensionality of “benchmarks,” “starting-gates” or “cuts”, according to means or circumstances, and according to action or output, and the various possible meanings of the relations between these two dimensions. Benchmark effort x^o and output y^o constitutes an “action-output” starting-gate. This differs from the “orthogonal” “means starting-gate” or “circumstance starting-gate” deciding which of the means or circumstances the individuals are entitled to (or accountable for), and which should see their effects equalized across individuals for each given level of effort – these means or circumstances, in both categories, are used by the individuals choosing their action (labor, effort). This latter allocation, here, entitles the individuals with their own productivities. But this is for deviations from the former action-output benchmark, and these deviations can a priori be positive or negative. As a consequence, having a lower productivity is worse or better according as effort x_i exceeds benchmark x^o or falls short of it. This results from the fact that the handicap of a lower productivity is compensated by paying a lower $f_i(x^o)$ – while everyone receives the same $\bar{f}(x^o)$. However, if $x_i \geq x^o$ for all i , the policy can also be seen as equalizing the effects of productivities for the labor x^o , and fully leaving them to the individuals for the extra shares of labor $x_i - x^o$. Equivalently, the individuals can be seen as being demanded an equal labor x^o whose proceeds $f_i(x^o)$ are equalized, and hence for which they receive an equal pay $\bar{f}(x^o)$, and then being free to supply any extra labor with untaxed earnings. Symmetrical meaningful interpretations can be presented for the case where $x_i \leq x^o$ for all i , with individuals buying leisure (lower effort) $x^o - x_i$ at the cost of foregone income $\bar{f}(x^o) - f_i(x_i)$, which is lower for less productive individuals (yet, decreasing returns in

conclusion of the discussion of the question of this information in Kolm 2001).

⁶² The determination of x^o is analyzed in Kolm 1997 and 2001.

productivity may tend to make differences lower for high efforts than for low ones)⁶³. This case, however, is less interesting for large societies such as nations where, doubtlessly, x^o will be such that $x_i > x^o$ for most people. For instance, the amounts of present-day national redistributions would be reached with x^o between one and two days of work a week⁶⁴.

This relative-meritarian equality of opportunity, applied to labour and labour-income, can realize most of the distributive function of public finance (income from capital initially comes from natural resources in which labour income from the human resources is by far the largest part). Issues of public microjustice and mesojustice, and benefit taxation for financing public goods, can complement the rational public finance. When such a scheme optimizes income distribution, sectorial distribution of particular goods can largely be left to individuals' expenditures through market provision. This can avoid the suboptimization typically induced by sectorial justice. The realization of justice in particular "spheres" (Walzer) – notably education, health, etc. analyzed by Roemer – should be explicitly modelled as second-best corrections of macrojustice allocating income when it is not implemented or misses some particular aspect due to inappropriateness of market allocation or to reasons for local equality (possibly found, for instance, in the formation of basic human capital in education or health care, or in the cultural aspect of education)⁶⁵.

⁶³ See the discussion in section 8.2.2. The present case is that of this section where the y^c have been fully equalized into y^o because the policy tools can be direct transfers among income outputs y_i (which is not possible for education or health). An individual i who has to pay $-t_i = f_i(x^o) - \bar{f}(x^o) > 0$ and whose earned income is her sole resource should work $x_i > \xi_i$ with $f_i(\xi_i) = -t_i$ or $\xi_i = f_i^{-1}[f_i(x^o) - \bar{f}(x^o)]$. This condition for *maximal* x^o and high $f_i(x^o) - f_i(x)$ for the relevant x corresponds to Dworkin's "slavery of the talented" – Dworkin probably thought $f_i(x)$ to be proportional to x , and this result is, rather, exhaustion of the talented, and their starvation if they accept to consume little for "buying" some leisure. This is the exact symmetrical case of full merit with $y^o = 0$ and the starvation of the untalented or their exhaustion if they work much for consuming. Dworkin presented his case as equal sharing of productive capacities. However, what he shares is the individuals' maximal production, obtainable with zero leisure. But a capacity also is leisure possible with each level of earned income. Then, the symmetrical maximal leisure, obtainable with zero income, is equalized with zero transfers (and possible starvation of the untalented). The general solution to the equalization of capacities is the presented scheme, with benchmark (x^o, y^o) depending of the moral weights a priori attributed to the values of consumption and leisure.

⁶⁴ See Kolm, 1997, 2001.

⁶⁵ I find it noteworthy that this central distributive scheme abides by Plato's and Aristotle's theory of justice. Either of their presentation can apply. If the individuals fully merit the product $f_i(x_i)$ of their chosen action x_i from commutative justice, rectificative or diorthic justice should equalize the value of their unequal given resources, and, with the chosen balance between output and leisure-labor for measuring this value, this equalizes the $f_i(x^o)$ in replacing it by $\bar{f}(x^o)$ for each individual i – a net transfer of $t = \bar{f}(x^o) - f_i(x^o)$. This also amounts to applying commutative justice from the starting-gate

12. Responsible, accountable, entitled, or guilty.

A Parisian saying asserts that after the age of forty, people are responsible for their face. It implies that they are not before. Then, since Pareto efficiency forbids that we equalize teenagers' opportunities in disfiguring the handsome, should we advocate free aesthetic surgery for the unfavored ones? Or should we compensate American teenagers with a plain face in giving them bigger cars (a substitute in their culture) financed by a tax on beauty? The general opinion is that we shouldn't, and that individuals are in general entitled to their beauty and sole accountable for any lack of it. Hence, responsibility – which requires free choice – can hardly be the only reason for not wishing to compensate inequalities, as Roemer tells us (though the discussion in his book is sometimes broader). More generally, choice, action or effort could hardly be the only reasons for differences in entitlement and accountability. This extends, of course, to other given social assets than beauty, such as, possibly, uses of productive capacities (whose value can, however, be redistributed, as noted in section 11), or to other characteristics of oneself such as capacities to enjoy short of medical cases of chronic depression. Then, the reasons for *ad hominem* entitlement or accountability, and for such legitimate or justified inequalities, are to be found in concepts of privacy, natural rights, natural liberties, needs, and notions of respect, defense and integrity of the self, personhood and identity (in addition to the action-based notions of desert, merit, aim-freedom, and responsibility). Conversely, one can be “responsible but not guilty”⁶⁶, and responsibility can be superseded by many reasons such as need or the relief of suffering⁶⁷. However, the issue is not actually inequality, but the choice between an equality in a tangible allocation and an equality in a right, liability or reason for aid defined by a reference to the subject. In fact, the modern forceful claim for equality opened with: “Men are free and equal in rights”. The domains of responsibility and of these subject-related principles have an important intersection, but they cannot coincide.

x^o , entitling individual i with her chosen $f_i(x_i) - f_i(x^o)$, while distributive justice equally shares the total possible benefits of x^o , $\sum f_i(x^o)$, in attributing $\bar{f}(x^o)$ to each individual.

⁶⁶ This was the decision about the French prime minister and ministers who let the stock of blood for transfusion be used after the discovery of HIV risk.

⁶⁷ All this is obvious, a main issue in the general life of society and in particular its legal side, and the object of a very large literature found at all times (needs and natural rights aspects are presented in Kolm 1984 and 1985 – see also 1996a, chap.5 and 11). In the context of a critique of the approach of Roemer and of the philosophers who inspired him, such issues have been forcefully pointed out by Fleurbaey (1995a, 1998) and Anderson (1999).

More generally, overall justice in any large society always is a moral polyarchy, and cannot be otherwise. For each given principle of justice, one can very easily find questions of justice for which it is, respectively, inapplicable, meaningless, absurd, requiring additional principles for making sense or being applicable, patently bad, or thought to be bad by everybody. On the other hand, most principles which have been observed or proposed find some cases where they make sense and may be the solution. Hence, any monism, dualism, or small set of principles, or even a priori given list of principles, can only be wrong when they are proposed as constituting the solution. On the other hand, the solution also turns out to be strongly structured, with applied principles hierarchized according to their scope and importance (hence the structure of macrojustice, mesojustice, and microjustice, noted earlier). One conclusion is that the interaction among important principles constitutes a major topic of analysis – this was, indeed, the subject of the foregoing discussion. Moreover, all the foregoing principles, and others, have to be considered for facing the set of problems of justice in a society. The borderline cases are in particular bound to have some scope of relevance. In one, the individuals fully own themselves and the result of their free actions or exchanges (a case of full merit). In the other, thorough social solidarity is required, jointly for all items, including individuals' eudemonistic capacities (i.e., capacities to derive happiness or satisfaction from given situations). Then, the solution is an ideal of equal happiness. Possibilities and Pareto efficiency often lead one to withdraw to the second-best criterion of leximin, for which maximin often suffices, and in these cases it often is clear who the most miserable individuals are and they often remain the same when the policy is applied⁶⁸. These principles, however, have their proper, limited scope of relevance in the overall hierarchical structure of distributive justice previously noted.

⁶⁸ This leximin in validly interpersonally comparable utility is “practical justice” (Kolm 1971). This utility has to have a tangible meaning – representing levels of satisfaction or happiness – and it is ordinal (this is “fundamental” preferences or utility). By contrast, the approach called “extended sympathy”, which rests on pure preference orderings, cannot give interpersonally comparable utility. John Broome and Dan Hausman, in particular, have seen this impossibility. Unfortunately, Broome has mistakenly asserted that he was criticizing the concept of fundamental preference. The origin of this mistake is that he tried to guess the theory in *Justice and Equity* from a translation into English of two lines by John Rawls (1982). Roemer (1996) has unfortunately endorsed Broome's misunderstanding (in spite of published answers).

13. Conclusion

What should an individual receive of the consequences of her actions, or, more generally, as consequence of her actions? The answer to this question has an important *sui generis* dimension (that is, one which does not rest on extraneous considerations such as harm, pain, pleasure, need, and so on). This rests on moral concepts or principles of responsibility, equality of opportunity, desert, deservingness, merit, or aim-freedom (and process-freedom), which determine the corresponding entitlements or liabilities. Though they all concern entitlements from individual action, they attach to various aspects of action, effort, or self, and they differ from one another, sometimes crucially. Morally, their individualism tends to make them second-rate, or second-best, principles. Indeed, responsibility, desert or merit may even just be “fetishizations” (moral hypostasis) of incentives or manipulation. However, since they moralize individualism and action, these concepts are very important on two grounds. They have this importance, *de facto*, in societies. And they are theoretically important because they implement the logically necessary form of respectful individualistic justice among agents, equal freedom⁶⁹. Yet, the problems they raise cannot be solved without careful consideration of their specific meanings, properties, relations, and fields of valid application, in relation with the properties of the notions of effort, entitlement and liability. The precise analysis of these concepts is important and necessary.

This precise analysis is not new. The oldest record of an analysis of justice is a practically formal model of these issues⁷⁰. This is Plato’s and Aristotle’s elaborate analysis of rewarding (or punishing) action according to merit, while equally sharing what is given. Discussions and elaborations of these proposals have been innumerable for centuries. In recent times, the central case of equality of opportunity has been shown to amount to the criterion of “equity” (recently sometimes labelled “no-envy”) with its extensions of “realistic equity” and the elaboration of second-best efficient maximins in opportunity⁷¹. It also is often described by models of fair processes, or by free exchange from equal sharing or income. Theories of the social contract (and in particular of the “original position”) rest on putative responsibility and equal opportunities. Essential distinctions are between the dual principles

⁶⁹ See Kolm 1996a, chap.1.

⁷⁰ We mean analysis, not just mention of criteria as in the Bible.

⁷¹ See section 10.3.

of desert and relative merit, and, in the latter case, between the two dual dimensions of the benchmark which refers to action or to means (or circumstances). The case of individuals using *sui generis* means they are deemed entitled to from an identical “starting gate” level of action constitutes meritocratic equality of opportunity. When these means are capacities, this yields the principle of income distribution entailed by classical basic rights, the efficient equal-labor income equalization.

These theories are all combinations of the ideal equalization allocation of some items among individuals and of assignments related to chosen actions. This relation to action constitutes a particular case (albeit a particularly important one) of assignments specific to individuals, which can also refer to concepts of privacy, the self, “natural rights” and so on. This leads to the more general problem raised by the logic of combining partial self-ascription and ideal equalization or compensation for the rest of individuals’ characteristics. This pervasive issue of social life leads to structures analogous to those previously discussed (a particularly clear case is met in the theories of the “partially original position”)⁷².

Roemer’s proposed specific solution is the maximization of the sum of the lowest individual outputs in the quantiles of same rank in the distributions in the various circumstances. This precise, elegant, operational and essentially meaningful formula raises questions which elicit interesting and important discussions and can, if needed, be answered by more general or different formulations of each issue; it thus constitutes an excellent starting point for the analysis of the considered family of basic moral concepts, of their properties and of their formalization. The questions concern the responsibility for the relative

⁷² Kolm 1985 and 1998b. These are two dual theories which consider uncertainty about the assignment of a subset of individual characteristics. Each has one of two aspects which are joined in theories of the “fully original position” (Harsanyi, Rawls). One (partial self-ascription) has a social ethical maximand. The other (fundamental insurance) has a putative collective agreement and hence relies on putative joint responsibility (a related suggestion is made by Dworkin, 1981, though the resulting allocation depends of individuals’ preferences, a feature he wants to avoid – see also Roemer 1986b). Partial self-ascription leads to the maximand $M = (\{ \bar{y}_c e_c \})$ which becomes, in particular, $\sum y_i$ if F is linear or if there is only one set of circumstances c , and $\min \bar{y}_c$ (Van de gaer’s form) when $F = \min$. However, the justification is accountability for the x_i but not responsibility for them. The y_i are the fundamental (validly interpersonally comparable) von Neumann-Morgenstern utilities. Each y_i with $i \in N_c$ is replaced by \bar{y}_c for expressing that the social ethical maximand cares about individual i ’s view ex ante a hypothetical lottery assigning the x_i for $i \in N_c$ among these individuals, with equal probability. This expresses that each individual is entitled to or accountable for the effects of the occurrence of the risky event which is the assignment of her x_i . If there is only one set of circumstances c , or if function F is linear (utilitarian with these utilities), the result is utilitarianism with these utilities (a Harsanyi-utilitarianism). For more details see Kolm 1998b.

rank and quantile; the objective of the highest sum of individual outputs; in particular the additivity of these outputs; a maximin of the outputs for the same effort as a second-best for their equality; interactions between the policy and individuals' behaviour; subsequent questions of suboptimization, utilitarianism, and Pareto efficiency; and the fact that this describes equality of individual opportunity only in particular (though important) cases.

In fact, the second-best for the ideal equalization of outputs for the same effort should rather be their more general replacement by an "egalitarian equal-equivalent". The overall maximand can favor lower inequality in outputs. The final maximand can in particular be a "mean of means". With the proper measures of inequality, the overall inequality then is the (unweighted or weighted) sum of inequalities due to circumstances and to efforts. The consideration of merit, rather than desert or responsibility, in particular relative merit, gives a maximand which is the dual – in a sense – of the previous one, in replacing each individual output by a benchmark output which can be specific to the circumstances and can be of various types. Finally, the general modelling of equality of opportunity leads to the above noted "equity" with its variants and efficient second-best particular maximins, or to a meritarian equality of opportunity where the individuals can freely benefit from their legitimate advantages from a benchmark of equal output for equal effort. Applied to income earnings, the latter scheme is equal-labor income equalization, an efficient principle of global distributive justice which classical basic rights can justify. From such a global allocation, the market can *prima facie* secure efficient sectorial allocations. Other ways and rules can only be justified by specific reasons.

References

- Anderson, E. 1999. What is the point of equality? *Ethics* 109:287-337.
- Aristotle. *Nicomachean Ethics*. Any edition.
- Aristotle. *Eudemian Ethics*. Any edition.
- Arneson, R. 1989. Equality and equal opportunity for welfare. *Philosophical studies* 56,77-93.
- Arneson, R. 1990. Liberalism, distributive subjectivism, and equal opportunity for welfare. *Philosophy and Public Affairs* 19, 150-194.
- Bossert, W. and Fleurbaey, M. 1996. Redistribution and compensation. *Social Choice and Welfare* 13, 343-355.
- Bossert, W., Fleurbaey, M. and Van de gaer, D. 1997. On second-best compensation. *Economic Design*.
- Cohen, G.A. 1989. On the currency of egalitarian justice. *Ethics* 99, 906-944.
- Cohen, G.A. 1995. *Self-ownership, Freedom, and Equality*, Cambridge: Cambridge University Press.
- Dworkin, R. 1981. What is equality? Part 1: Equality of welfare, Part 2: Equality of resources. *Philosophy and Public Affairs* 10, 185-246 and 283-345.
- Fleurbaey, M. 1995a. Equal opportunity or equal social outcome? *Economics and Philosophy* 11:25-55.
- Fleurbaey, M. 1995b. Equality and responsibility. *European Economic Review* 39, 683-689.
- Fleurbaey, M. 1998. Equality among responsible individuals. In J.-F. Laslier *et alii*, eds., *Freedom in Economics, New Perspectives in Normative Analysis*, London: Routledge.
- Fleurbaey, M. 2000. Egalitarian Opportunities. Mimeo.
- Fleurbaey, M. 2001a. Equality of resources revisited. Mimeo.
- Fleurbaey, M. 2001b. Review of Roemer's *Equality of Opportunity*. *Journal of Economic Literature*.
- Fleurbaey, M. and Maniquet, F. 1996. Fair allocation with unequal production skills: the no-
envy approach to compensation. *Mathematical Social Sciences* 32, 71-93.
- Fleurbaey, M. and Maniquet, F. 1999. Fair allocation with unequal production skills: the
solidarity approach to compensation. *Social choice and Welfare* 16,4, 569-583.
- Harsanyi, J. 1953. Cardinal utility in welfare economics and in the theory of risk-taking. *Journal of Political Economy* 61:434-35.
- Jencks, C. 1988. What must be equal for opportunity to be equal? In N. Bowie, ed., *Equal
Opportunity*, Boulder, co: Westview Press.
- Kolm, S.-Ch. 1966a. The optimal production of social justice. In H. Guitton and J. Margolis
eds. Proceedings of the International Economic Association Conference on Public
Economics. Biarritz: IEA and CNRS. *Economie Publique*, 1968, Paris: CNRS, pp.109-
77. *Public Economics*, 1969, London: Macmillan, pp.145-200.
- Kolm, S.-Ch. 1966b. *Les choix financiers et monétaires*. Paris: Dunod.
- Kolm, S.-Ch. 1970. L'inégalité des valeurs des vies humaines. *Cahiers du séminaire
d'économétrie*.
- Kolm, S.-Ch. 1971. *Justice et Équité* Paris: CEPREMAP. Reprinted 1972. Paris: CNRS.
English translation with new foreword: 1998. *Justice and Equity*. Cambridge, MA:
MIT Press.
- Kolm, S.-Ch. 1973. Super-equity. *Kyklos* 26, 841-43.
- Kolm, S.-Ch. 1976a. Unequal Inequalities. *Journal of Economic Theory*. I,12:416-42,
II,13:82-111.
- Kolm, S.-Ch. 1976b. Public Safety. *American Economic Review*, 66:382-387, also in *Essays*

- in Public Economics*, A. Sandmo, ed., Lexington books, Heath and Cy., 1978, pp.1-9.
- Kolm, S.-Ch. 1982 (second edition 1994). *Le Bonheur-Liberté*. Paris: Presses Universitaires de France.
- Kolm, S.-Ch. 1984a. *La Bonne Economie: La Réciprocité Générale*. Paris: Presses Universitaires de France.
- Kolm, S.-Ch. 1984b. *Le Libéralisme Moderne*. Paris: Presses Universitaires de France.
- Kolm, S.-Ch. 1985. *Le Contrat Social Libéral*. Paris: Presses Universitaires de France.
- Kolm, S.-Ch. 1987. *L'Homme pluridimensionnel*. Paris: Albin Michel.
- Kolm, S.-Ch. 1990. *The General Theory of Justice*. Paris: CERAS.
- Kolm, S.-Ch. 1991a. The normative economics of unanimity and equality: equity, adequacy and fundamental dominance. In K. Arrow, ed., *Markets and Welfare*, London: Macmillan, 243-86.
- Kolm, S.-Ch. 1991b. Philosophical reasons for equity. Paris: CERAS, 99.
- Kolm, S.-Ch. 1991c. Super-equity. German Bernacer Lecture. University of Alicante. Paris: CERAS, 98.
- Kolm, S.-Ch. 1993a. Distributive justice. In *A companion to Political Philosophy*. Ed. By R. Goodin and P. Pettit. Oxford: Basil Blackwell, 438-61.
- Kolm, S.-Ch. 1993b. *Equal Liberty*. Paris: CGPC.
- Kolm, S.-Ch. 1993c. Efficient economic justice. Paris: CGPC.
- Kolm, S.-Ch. 1993d. *Inequalities and Super-Equity*. Paris: CGPC.
- Kolm, S.-Ch. 1993e. The impossibility of utilitarianism. In P. Koslowski and Y. Shionoya, eds., *The Good and the Economical*, Berlin: Springer-Verlag, pp.30-66.
- Kolm, S.-Ch. 1995. The economics of social sentiments: the case of envy. *Japanese Economic Review*. 46,63-87.
- Kolm, S.-Ch. 1996a. *Modern Theories of Justice*. Cambridge MA: MIT Press.
- Kolm, S.-Ch. 1996b. Theories of Justice. *Social Choice and Welfare* 13:151-82..
- Kolm, S.-Ch. 1996c. Intermediate measures of inequality. Paris: CGPC.
- Kolm, S.-Ch. 1997. *Macrojustice*. Paris: CGPC.
- Kolm, S.-Ch. 1998a. *Justice and Equity*, translation, see 1971.
- Kolm, S.-Ch. 1998b. Chance and justice. *European Economic Review* 42:1393-1416.
- Kolm, S.-Ch. 1999a. Rational foundations of income inequality measurement. In J. Silber, ed., *Income Inequality measurement*, Boston: Kluwer, pp.19-100.
- Kolm, S.-Ch. 1999b. Freedom Justice. Université de Caen.
- Kolm, S.-Ch. 2000. A historical introduction to normative economics. *Social Choice and Welfare* 4.
- Kolm, S.-Ch. 2001. *Macrojustice*.
- Lamont, J. 1995. Problems for effort-based distribution principles. *Journal of Applied Philosophy* 12, 215-29.
- Levine, A. 1999. Rewarding effort. *The Journal of Political Philosophy* 7, 4, 404-18.
- Locke, J. [1690] 1960. *Second Treatise of Government*, ed. by Laslett. Cambridge: Cambridge University Press.
- Lucas, J. 1993. *Responsibility*. Oxford: Oxford University Press.
- Mackie, J.L. 1985. *Persons and Values*. Oxford: Oxford University Press.
- Maniquet, F. 1998. An equal-right solution to the compensation-responsibility dilemma. *Mathematical Social Sciences* 35, 185-201.
- Nozick, R. 1974. *Anarchy, State and Utopia*. Oxford: Basil Blackwell.
- Piggins, A. 1999. Review of books. *Economic Journal*.
- Plato. *The Laws*. Any edition.
- Pojman, L. and McLeod, O. 1999. *What Do We Deserve? A Reader on Justice and Desert*. Oxford: Oxford University Press.

- Rawls, J. 1971. *A Theory of Justice*. Oxford: Oxford University Press.
- Rawls, J. 1982. Social unity and primary goods. In A. Sen and B. Williams, *Utilitarianism and Beyond*, Cambridge: Cambridge University Press, 159-85.
- Richards, J.R. 1998. Equality of opportunity. In A. Mason, ed. *Ideals of Equality*, Oxford: Blackwell, pp.52-78.
- Roemer, J. 1986a. *Value, Exploitation and Class*. Chur: Harwood.
- Roemer, J. 1986b. Equality of resources implies equality of welfare. *Quarterly Journal of Economics* 101: 751-84.
- Roemer, J. 1993. A pragmatic theory of responsibility for the egalitarian planner. *Philosophy and Public Affairs* 22: 146-66.
- Roemer, J. 1996. *Distributive Justice*. Cambridge MA: Harvard University Press.
- Roemer, J. 1998. *Equality of opportunity*. Cambridge MA: Harvard University Press.
- Schaar, J. 1967. Equality of opportunity, and beyond. In J.R. Pennock and J.W. Chapman, eds., *Nomos IX. Equality*, New York: Atherton Books.
- Singer, P. 1993. *Practical Ethics*. 2nd edn. Cambridge: Cambridge University Press.
- Van de gaer, D. 1993. Equality of opportunity and investment in human capital. Katholieke Universiteit Leuven.
- Vlastos, G. 1962. Justice and equality. In R. Brandt, ed., *Social Justice*, Prentice Hall, and in P. Pojman and R. Westmoreland, *Equality*, 1997, Oxford: University Press, pp.120-33
- Walzer, M. 1983. *Spheres of Justice*. Cambridge MA: Harvard University Press.
- Williams, B. 1973. The idea of equality. In B. Williams, *Problems of the Self*, Cambridge: Cambridge University Press
- Williams, B. 1985. *Ethics and the Limits of Philosophy*.