Desert and Distributive Efficiency*

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ABSTRACT

It is highly desirable for an allocation of goods to be efficient. However, one might also deem it important that an allocation gives individuals what they deserve. This paper investigates whether it is possible for an allocation to be both efficient and give people what they deserve. It will first of all consider comparative desert, and conclude that it is possible to satisfy both desiderata. It will then consider absolute desert by integrating Shelly Kagan's work on desert and economic theory. The conclusion will be that there are potential conflicts between absolute desert and efficiency. The paper will then examine how to select the best compromise between the two values, considering several different conceptions of absolute desert.

RÉSUMÉ

Il est fortement désirable pour une allocation des biens d'être efficiente. Pourtant, on peut aussi juger important que l'allocation donne aux individus ce qu'ils méritent. Ce papier examine s'il est possible pour une allocation d'être à la fois efficiente et de donner aux individus ce qu'ils méritent. Tout d'abord, nous considérons des mérites comparatifs et nous concluons qu'il est possible de satisfaire les deux exigences. Ensuite nous considérons le mérite absolu en intégrant les travaux de Shelly Kagan sur le mérite et la théorie économique. Nous concluons qu'il existe des conflits potentiels entre le mérite absolu et l'efficience. Le papier examine alors comment sélectionner le meilleur compromis entre les deux valeurs, considérant plusieurs conceptions du mérite absolu.

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INTRODUCTION

The concept of desert has, in recent years, enjoyed increasing attention from those studying questions of distribution and justice.[1] Most of the attention has centred on clarifying the concept of desert and considering its normative appeal. Almost no attention has focused on the relationship between desert and distributive efficiency. This is problematic.[2] However attractive distributing according to desert might be, distributing efficiently also has immense appeal. For that reason it is important to consider how desert and efficiency relate. Are there allocations that are optimal from both the perspective of efficiency and of desert? If so, how do we find them? If not, and there are potential conflicts between the two, which allocation represents the best compromise between the two desiderata? As both desert and efficiency are desirable in a distribution, we require some way of marrying the two ideals or at least of making trade-offs between them. This is why I wish to examine the relationship between desert and efficiency.

In order to do so, a theoretical framework is required that allows us to think about both concepts simultaneously. In this paper I seek to produce such a framework by integrating recent work on the concept of desert, with a special focus on the work of Shelly Kagan, into the economic theory of distributive efficiency. Given Kagan's rigorous work on desert, it is quite simple to integrate it into standard economic theories. This allows us to see the relationship between desert and efficiency. It will allow us to consider which distributions are most appealing from the perspectives of the two desiderata.

I will start off by making a few preliminary remarks about desert and efficiency, before considering how they relate. Desert comes in two varieties: fundamentally comparative and absolute. The first part of the paper will focus on the former conception of desert. The second part of the paper will consider the latter conception, which is the one Kagan adopts. I will investigate if desert and efficiency can both be satisfied, and which allocation represents the best compromise between the two values if they cannot both be satisfied.

DESERT AND EFFICIENCY

Desert is a particular ideal of distributive justice. It starts from the basic intuition that individuals who do good things should prosper, while those who do bad things should suffer. This is a common intuition that seems to be a prominent feature in many people's moral landscape. Many people feel that there should be a certain harmony between the nature of individuals' actions on the one hand, and how well they are doing on the other. I wish to focus on a fairly specific conception of desert, which may be summarised in the desert thesis[3]:

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[1] For example, see two recent edited volumes. See Serena Olsaretti, Desert and Justice, Mind Association Occasional Series (Oxford: Clarendon Press, 2003). See also Louis P. Pojman and Owen McLeod, What Do We Deserve? : A Reader on Justice and Desert (New York ; Oxford: Oxford University Press, 1999).

[2] Some work on comparative desert has implicitly considered questions of feasibility, which are in certain respect related to questions of efficiency. However, there has been no explicit discussion of the relationship between desert and distributive efficiency.

[3] See Thomas Scanlon, What We Owe to Each Other (Cambridge, Mass. ; London: Belknap Press of Harvard University Press, 1998), p.274.

> Individuals who make choices or undertake actions that are deemed good should be well off, while individuals who make choices or undertake actions that are deemed bad should be badly off.

The concept of desert is a notion that governs the distribution of particular goods and forms of treatment. Claims of desert feature a person on whose behalf the claim is made, a specification of what is claimed and a reason that supports the claim, the desert-base.[4] However, for a desert claim to be valid, certain conditions must be met.

First of all, it seems obvious that the reasons one might give in order to support the assertion that a person is deserving all point to facts about that person. However, not every characteristic of the individual will do in this context. For example, most will agree that the fact that someone has blue eyes and white skin does not make him deserving. Why is this the case? It seems that when considering the characteristics that individuals may have, the ones that may be plausibly cited in support of desert are the ones they possess in a morally significant sense, i.e. the ones for which they are responsible.[5]

Desert also has a second requirement; in order to be deserving the desert-base must be appraised as good or bad; it must be something that is valued positively or negatively. This leads to a second restriction on potential desert-bases, the appraisive requirement. It holds that desert-bases must be appraised as good or bad. When a desert-base is positively appraised, it makes its possessor deserving of a larger distributive share while a negatively appraised desert-base makes its possessor deserving of a smaller share.

A final restriction on potential desert-bases, the proportionality requirement, holds that there must be some congruence between how the desert-base is appraised and the size of the associated adjustment in one's distributive share. If a desert-base is appraised as very good, it justifies its possessor being very well off, while more moderately appraised desert-bases should be associated with smaller distributive shares.

Rewarding according to desert has great intuitive plausibility. Imagine two universes with identical numbers of saints, i.e. individuals who do good things, and sinners, i.e. individuals who do bad things, and with identical amounts of burdens and benefits to be distributed. In one universe the saints have the benefits and the sinners have the burdens, while in the other the saints have the burdens and the sinners the benefits.[6] Many people feel that there is something wrong in the latter case, but not in the former. Similarly one might think that if the moderately good are doing exceedingly well or the moderately bad are exceedingly badly off, something is amiss. In short, many people feel that there should be a certain harmony between the nature of individuals and their actions on the one hand, and how well they are doing on the other.

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[4] See J Feinberg, "Justice and Personal Desert," Nomos Vi; Justice, eds. C.J. Friedrich and J.W. Chapman (New York, NY: Atherton, 1963).

[5] Of course, this raises many questions concerning the nature of responsibility, and in particular whether or not the operation of luck undermines desert. For an overview of this debate, see Serena Olsaretti, Liberty, Desert and the Market : A Philosophical Study (Cambridge: Cambridge University Press, 2004). However, this question need not detain us here, as I will assume that there are things for which individuals are responsible and which might render them deserving.

[6] See for the origin of this example W.D. Ross, "What Things Are Good?," What Do We Deserve?, eds. L Pojman and O McLeod (Oxford: Oxford University Press, 1999), p. 59.

In particular, I believe that justice as desert has two characteristics that make it appealing. First of all, desert allows for some individuals to be better off than others because of their actions and choices. This allows desert to cater to the common intuition that individuals' distributive share should be linked to those characteristics that they are responsible for. Secondly, desert distributes according to a common conception of the good. It allows societies to determine what sort of behaviour they find valuable, and reward accordingly. Justice as desert is one of the few theories of justice that incorporates some notion of the good, and in this way appeals to the value of community. While liberals[7] who see neutrality as the first virtue will find this offensive, those who are of a more communitarian persuasion will find desert appealing.[8]

The above has been the briefest of sketches of justice as desert. However, what is relevant for current purposes is that desert specifies a particular pattern of allocation among individuals that it deems just. Throughout this paper I will assume that desert is given exogenously, i.e. that desert simply specifies a particular distribution that is independent of other variables in the model.

Distributive efficiency requires that the benefits available for distribution be allocated in such a way that it is impossible to improve one person's position without making anyone worse off. In this context I am using the idea of Pareto efficiency. An allocation is Pareto efficient if no Pareto improvements are possible, i.e. if it is impossible to improve anyone's distributive position without making anyone else's position worse. Put loosely, it requires that there be no waste in an allocation. For if there are resources that are not allocated, then they may be used to improve the position of individuals without making anyone else worse off. However, if all resources are allocated then it is impossible to improve one person's position without taking from others. This is also an appealing characteristic for an allocation to possess. For, if it were possible to make some individuals better off, at no cost to anyone, not doing so seems irrational. We would be wasting resources, resources that could be used to improve people's lives. In other words, efficiency is appealing because it maximises social welfare. It does not waste any of society's limited resources, but ensures that they are used to benefit people as much as possible.

Efficiency is easily modelled. Let us assume that a society knows only one generic type of benefits, to be distributed among A and B, and that there is a fixed amount of 12 units available. There are many ways of distributing these 12 units in an efficient fashion. They are represented by the diagonal line, the Frontier, in Figure 1.

[7] For Example, see Bruce A. Ackerman, Social Justice in the Liberal State (New Haven: Yale University Press, 1980), Chapter 1.

[8] For example, Michael Sandel, a prominent communitarian, has criticised the work of John Rawls for ignoring the importance of the good. See Michael Sandel, Liberalism and the Limits of Justice (Cambridge [Cambridgeshire] ; New York: Cambridge University Press, 1982). Desert does not suffer from this problem.

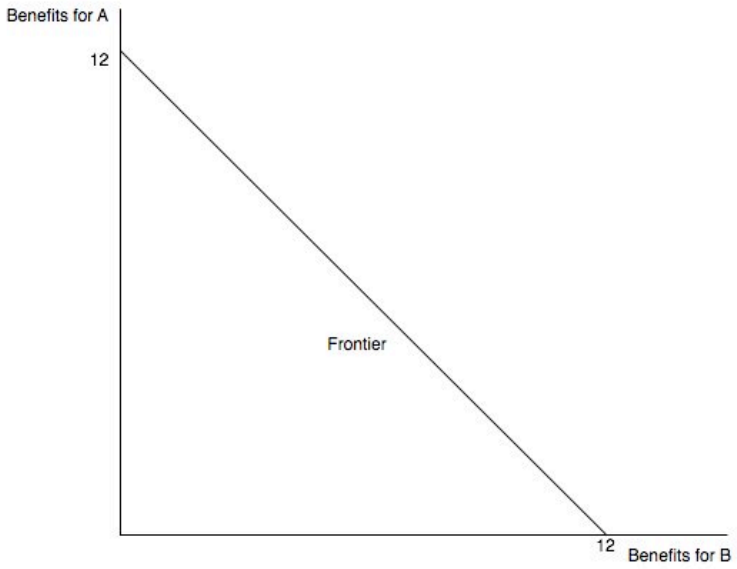

Figure 1

Every point on the Frontier represents an efficient way of allocating the 12 units of benefits among A and B. For, if we are on the Frontier, all goods are allocated, and it is not possible to make one of the individuals better off without making the other worse off. By contrast, allocations within the Frontier are inefficient, because not all goods are allocated. The unallocated goods might be used to make individuals better off without redistribution. The slope of the line is –1, as taking 1 unit of benefits from A allows us to give 1 unit of benefits to B, preserving an allocation without waste.

COMPARATIVE DESERT

Some theorists of desert have conceived of desert in exclusively comparative terms.[9] They hold that desert requires that the benefits individuals have allocated to them obey a particular proportional harmony. This proportion is determined by desert, i.e. by how virtuous individuals have been. For example, comparative desert might hold that A deserves twice as much as B. This conception of desert specifies a particular ratio between A's desert and B's deserts, and requires that the allocation of benefits be in harmony with this ratio.

Strictly comparative desert can be graphically represented by a desert-line, specifying possible allocations of goods among A and B that have the appropriate ratio. For example, if we assume that A deserves twice as much as B it is possible to draw a desert-line in the efficiency framework. This line connects all allocations that give A twice as much as B. It is indicated in Figure 2.

[9] For example, see David Miller, "Comparative and Noncomparative Desert," Desert and Justice, ed. Serena Olsaretti (Oxford: Oxford University Press, 2003).

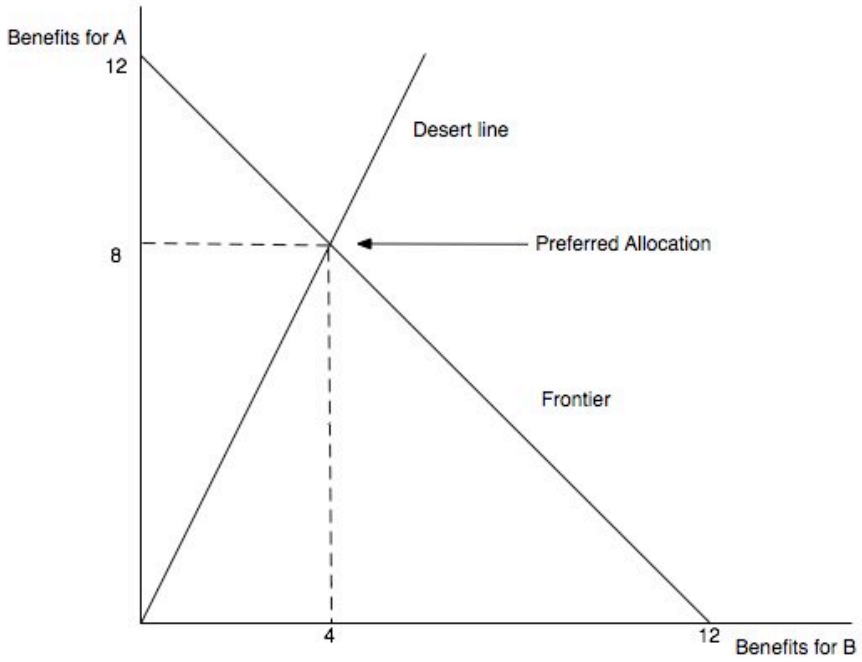

Figure 2

Such a conception of desert is not at odds with efficiency. Any allocation that satisfies the deserved ratio is optimal from the perspective of desert. Hence one can simply select the efficient allocation that satisfies the deserved ratio. This allocation will be optimal from the perspectives of efficiency and desert, and no trade-offs are required. To find this allocation, one looks at the intersection of the desert-line and the Frontier. This can be done for cases with more than 2 individuals as well, by expanding the number of dimensions. In the example we are considering, with a total endowment of 12 units of benefits, A should have 8 units and B should have 4. This can be surmised from Figure 2.[10] In this way, the requirements of comparative desert and efficiency together specify a uniquely attractive allocation of benefits. Comparative desert and efficiency go together very well. Indeed, they need each other. Neither can specify a specific allocation. However, together they do produce a unique solution to the distributive problem. Alas, the same does not go for absolute desert.

ABSOLUTE DESERT

Absolute desert differs from comparative desert in that it requires a particular allocation of benefits rather than merely that a particular proportion be observed in the distribution. The idea behind absolute desert is that individuals deserve specific, cardinal amounts of benefits, by virtue of how they have behaved. Absolute desert is far more complicated from the perspective of efficiency. However, it has also been the beneficiary of rigorous analysis by Shelly Kagan.

[10] The Frontier is given by $a = 12 - b$. The Desert line is given by $a = 2b$. Putting these two together yields $b = 4$ and $a = 8$.

Kagan's great innovation is to conceive of desert in graphical terms.[11] By modelling our intuitions about desert in a graph it becomes quite easy to integrate it into standard economic models, as I will demonstrate below. These so-called desert-curves chart the goodness of an allocation from the perspective of desert against various possible allocations. Kagan conceives of desert in absolute terms. The quantities of benefits[12] one deserves are given exogenously, and in some cardinal measurement. Individuals are, by virtue of some characteristic they possess, assumed to deserve a certain number of units of benefits. Them having this amount of benefits would be the optimal outcome from the perspective of desert. If they have more or less benefits than they deserve, this is less good from the perspective of desert. Hence Kagan constructs the following graph.[13]

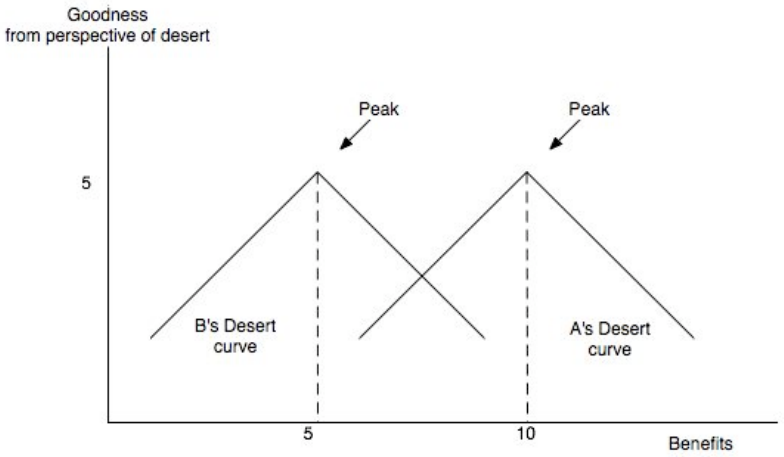

Figure 3

The roof-like line is one individual's desert-curve. It represents how good it would be if this individual had various levels of benefits. The level of benefits one deserves is represented by the highest point in the graph, or the peak. If the individual has less or more benefits than this optimum, this would be less good than him having the optimum, and so the curve slopes downwards from the peak on both sides. The more an individual deviates from his peak, the worse the outcome is, and the lower the relevant point on the graph. In this desert graph, we see two individuals, A and B. A deserves 10 units of some benefit, and B deserves 5. The slopes of the mountain are straight, and are assumed to have a slope of 1 or –1 on either side. This type of desert-curve is referred to as simple straight desert. Kagan also considers a few different types of desert-curve, and I will introduce these when I discuss their application to the economic framework under consideration. But I will start with the simplest case, represented in Figure 3.

The desert-curves specify an ideal distribution from the perspective of desert. One might represent this ideal distribution from the perspective of desert in Figure 2 with a star. Call this the sweetspot. It is the coordinate defined by the location of the peaks of A and B's desert-curves.

[11] See Shelly Kagan, "Equality and Desert," What Do We Deserve?, eds. L Pojman and O McLeod (Oxford, UK: Oxford University Press, 1997).
[12] Kagan places welfare on the X-axis. However, for present purposes, placing benefits on the X-axis is more convenient. Kagan explicitly allows this substitution, and it has no consequences for his argument.
[13] See Kagan, "Equality and Desert,", Section 3.

Given the fact that the conception of desert under consideration is absolute, and what people deserve is exogenously given, it can be anywhere in the figure; it need not be on the Frontier.

Obviously, if the sweetspot happens to fall on the Frontier, desert and efficiency can both be satisfied, and this allocation would be optimal from the perspective of both desert and efficiency. However, there is no reason to assume that this would generally be the case. Hence it is already clear that desert and efficiency will often be in conflict. The distribution required by absolute desert will often be either inefficient, if the sweetspot lies within the Frontier, or infeasible, if it lies beyond the Frontier. And this is to be expected, given the fact that efficiency is a function of the available resources and absolute desert is not. It might be the case that when we have given everyone what they deserve, there are still some benefits left over. Efficiency requires that they not be wasted and distributed. However, from the perspective of desert, this would make matters worse, as it removes the distribution from the sweetspot. In this case a society dedicated to both ideals would have to find a compromise between the requirements of desert and efficiency. I will discuss this case later in the argument.

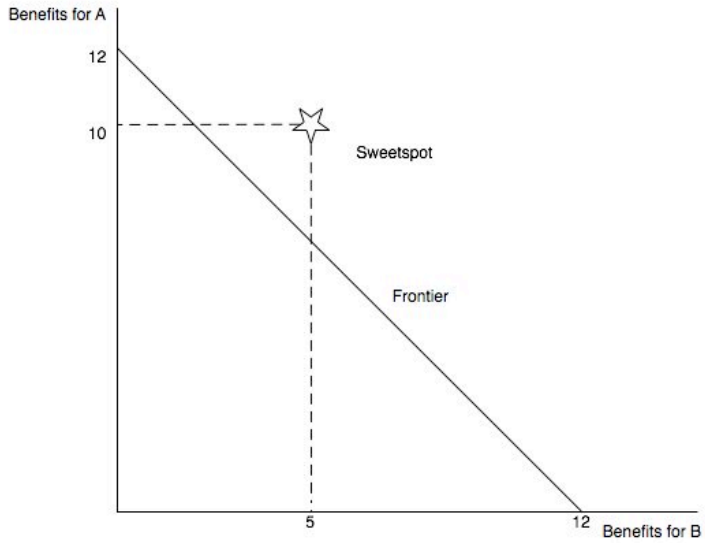

Figure 4

In the case presented in Figure 4, based on the desert-curves of Figure 3 and the resources of Figure 1, the opposite problem occurs. The sweetspot lies beyond the Frontier. This means that there are not enough benefits to give everyone what they deserve, and satisfying desert is infeasible. Doing so would require 15 units of benefits, and there are only 12 units available. We must find a compromise. This allocation would be the least bad distribution from the perspective of desert that is efficient and hence feasible.

ISOKAGANS

In this context Kagan's slopes are of great importance. They show how bad it is from the perspective of desert if individuals have more or less benefits than they deserve. Hence they may be used to construct what I will call *IsoKagans.* An IsoKagan connects a series of allocations that are equally bad from the perspective of desert. It should be conceptualised as an indifference curve for the concept of desert. I say equally bad from the perspective of desert, because the points on an IsoKagan are all equally suboptimal from the perspective of desert. As such they

originate from the sweetspot, in a series of concentric figures. Their particular shape is determined by the shape of the desert-curves of the individuals, as these represent how bad particular deviations from the peak are from the perspective of desert. One interesting feature of IsoKagans is that, unlike indifference curves, they completely encircle the sweetspot. This is because desert does not only consider it suboptimal if individuals have less than their peak, but also if they have more than their optimum. As such, desert is indifferent between various individuals having either more or less than they deserve to some extent.

To draw an IsoKagan, one must simply connect allocations that are equally bad from the perspective of desert. To measure this one should look at the desert-curves, and use them to determine how much an allocation deviates from desert. If we take an allocation of benefits among A and B, the amounts they receive can be looked up on the relevant desert-curves. Associated with the distributive share of each individual is a score on the vertical axis, i.e. in terms of the goodness of this outcome from the perspective of desert. The difference between the goodness associated with the peak and the goodness of the particular allocation under examination, represents how bad it is that the individual has more or less than he deserves. For a given allocation of benefits, one may sum these goodness deficits for all individuals, and this produces a measure of how bad a distribution is from the perspective of desert, which I call deviation-score. The lower the deviation-score, the closer an allocation is to the sweetspot, and hence the closer it is to desert. I give complete instructions for deriving IsoKagans in the Appendix, but for the argument I will only use intuitive arguments.

In the example, I have assumed that if an individual has 1 unit of benefits less than he or she ideally deserves, this reduces the goodness of the distribution by 1 unit of goodness. This follows from the slope of the desert-curves. So an allocation of benefits that gives A 10 units of the good and B 2 units, results in a deviation-score of 3. An allocation that gives A 7 units and B 5 units, also has a score of 3, as does an allocation of 8.5 for A and 3.5 for B, or for that matter an allocation of 12 for A and 6 for B. Please note that the direction of the deviation does not matter. As such the deviation is always positive. If A has 9 and B has 9, the deviation-score of that allocation is 5, i.e. 1+4, and not 3, i.e. –1+4. Connect all the allocations with an identical deviation-score and one has the IsoKagan for that score.

Given the desert-curves in Figure 1, and in particular the fact that they are identical for both individuals, straight and symmetrical, the IsoKagans will take the shape of square diamonds, centred around the sweetspot. The slopes of the sides of the IsoKagans will be 1 or –1. This is the case for the simple reason that both individuals have identically shaped desert-curves. This means that taking one unit of benefits from the one, and giving it to the other, produces no change in deviation-score. I give a mathematical proof of this result in the Appendix. Different curves will produce differently shaped IsoKagans, and I will discuss these later.

Armed with our IsoKagans, it becomes easy to see which feasible allocations are preferred from the perspective of desert. One simply takes the efficient allocation that is on the IsoKagan that is closest to the sweetspot, i.e. which touches the Frontier. This allocation represents the efficient and feasible allocation that is least bad from the perspective of desert. This would be the preferred allocation from the perspectives of desert and efficiency.

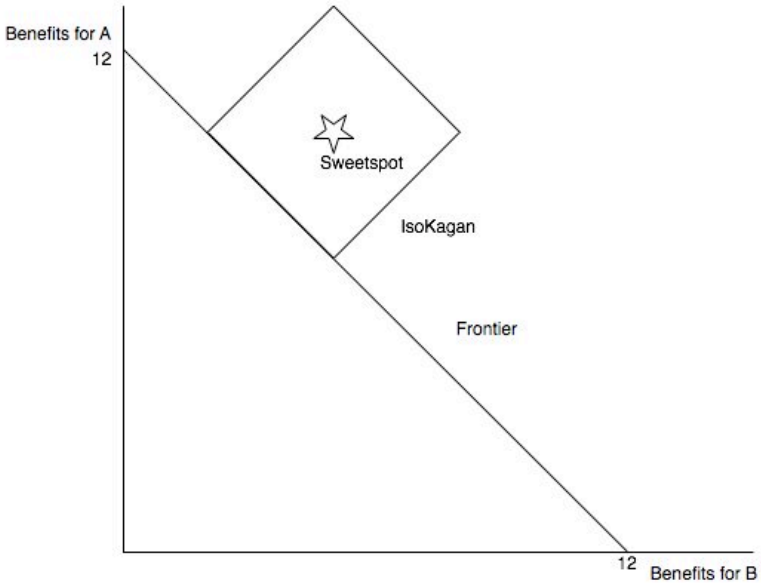

Figure 5

However, note that the relevant section of the IsoKagan and the Frontier have the same slope of -1. This will often be the case, as the Frontier will always have this slope, and the IsoKagan will have this slope if the desert-curves are straight, symmetrical and identical for both individuals.[14] This means that there is a whole series of allocations that are efficient and that lie on the same IsoKagan. Desert and efficiency are indifferent between the allocations on the overlap of the Frontier and the IsoKagan.

THE Y-GAP VIEW

One might further reduce the number of eligible allocations by introducing a consideration of comparative desert. This use of comparative desert is subsidiary to absolute desert, in that it presupposes that what individuals deserve is given in a cardinal amount. As such, it is quite distinct from comparative desert as it was encountered above. The idea of supplementary comparative desert is that individuals' shares should be in proportion to the location of their peaks, i.e. they should deviate from their peaks to the same extent.[15] This is justified by an appeal to fairness, or the idea that individuals' claims should be satisfied to the same extent.[16] It is an additional, and to some extent independent, concern that may serve as a tie-breaker in this context. For the IsoKagans only take into account the summed deviation from the peaks of the individuals, but not how the deviations are distributed. Supplementary comparative desert imposes the additional criterion that any deviation be equally shared. Of course, the idea needs further specification, and it has been elaborated in various fashions. Kagan himself has suggested

[14] Interestingly enough, the slopes of the desert-curves do not impact the shape of the IsoKagans, provided they are the same for all individuals.

[15] For example see Owen McLeod, "On the Comparative Element of Desert," Desert and Justice, ed. Serena Olsaretti (Oxford: Oxford University Press, 2003).

[16] For example, see J Broome, "Fairness," Proceedings of the Aristotelian Society 91 (1991).

the Y-gap view.[17] This holds that supplementary comparative desert is satisfied if two conditions are met. First of all, individuals must be on the same side of their peaks. This is obviously required. For if I have less than I deserve, comparative desert would hardly be satisfied if you were given more than you deserve. The direction of deviation from desert must be the same for all individuals concerned. The second condition, which gives the view its name, holds that individuals should be equally far from their peaks in terms of the Y-axis that measures the goodness from the perspective of desert. In Figure 6, B' and A' are equally good from the perspective of supplementary comparative desert, as both individuals are on the same side of their mountains and equally far from their peaks, measured in terms of goodness.[18]

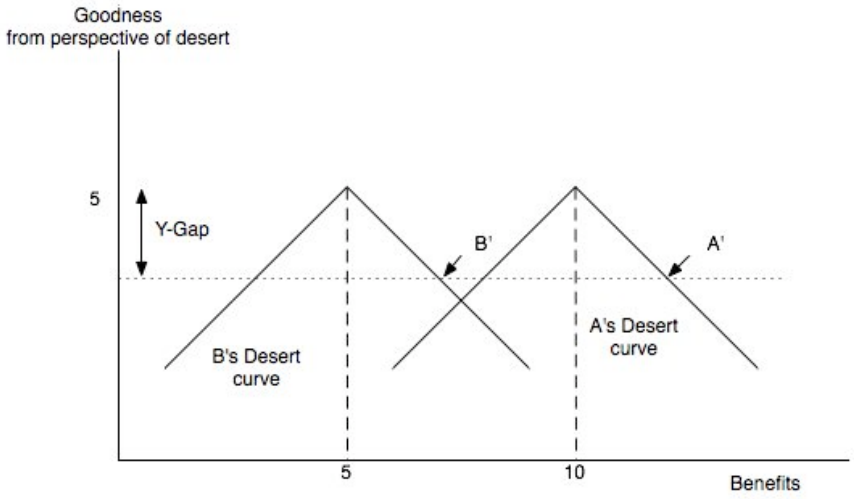

Figure 6

An alternative view of supplementary comparative desert is the Ratio view, holding that comparative desert requires that the benefits individuals enjoy must be in proportion to the location of their peaks. The ratio of individuals' peaks must be identical to the ratio of their amounts of benefits. For example, if A deserves 100 units of benefits and B deserves 50 units of benefits, then if B has 40 units, A should have 80 units. Kagan discusses this view in his *Comparative Desert*.[19] It is rejected on the basis of the following case. Imagine A deserves –10, deserving a life not worth living[20], and B deserves +20. Assume that A is at –5 and that this cannot be changed. According to the Ratio view, B should then have +10. But this would mean that comparative desert would give B less than she deserves because A has more than she deserves. In other words, if A has more than she deserves, the way to satisfy comparative desert according to the ratio view is to make B worse off. This is a perverse outcome, as it does not satisfy the basic intuition of supplementary comparative desert that if A has more than she deserves, B should have more than she deserves as well. Hence the ratio view must be mistaken.

The Y-gap view requires that we select an allocation in which the deviations in goodness from the ideal distribution in terms of desert are the same for both individuals. On an IsoKagan, this is the allocation for which both individuals have more or less than they deserve to the same extent in

[17] Shelly Kagan, "Comparative Desert," Desert and Justice, ed. Serena Olsaretti (Oxford: Oxford University Press, 2003).
[18] Taken from Kagan, "Comparative Desert,", p. 111.
[19] Kagan, "Comparative Desert,", pp. 100-03.
[20] Kagan assumes that one can deserve a negative position, i.e. a life not worth living.

terms of goodness. So for the IsoKagan associated with a deviation-score of 3, the Y-gap view would privilege the allocation where both individuals shoulder an equal portion of the deviation. Both would have 1.5 units of goodness more or less than what they deserve. This means that every IsoKagan has 2 Y-Gap points, one for when individuals have more than they deserve, and one for when they have less than they deserve. Because of the requirement for supplementary comparative desert that deviations be in the same direction, allocations where one individual has more than he deserves and the other less are ruled out.

One might construct a line linking all the Y-Gap points on the various IsoKagans. This Y-Gap line will intersect with the Frontier, and the allocation at this intersection is the Y-Gap point of the highest efficient IsoKagan. This allocation, which is efficient, satisfies supplementary comparative desert, and is the least bad from the perspective of absolute desert is the preferred allocation from the perspectives of efficiency and desert. In this particular example, the preferred allocation would be 8.5 units of benefits for A and 3.5 units for B. In this allocation efficiency is satisfied, as all 12 units are distributed and it is impossible to give to the one without taking from the other. But this allocation is also privileged by desert. It lies on the highest feasible IsoKagan, and both individuals have less than they deserve to the same extent, satisfying the Y-gap view of supplementary comparative desert.

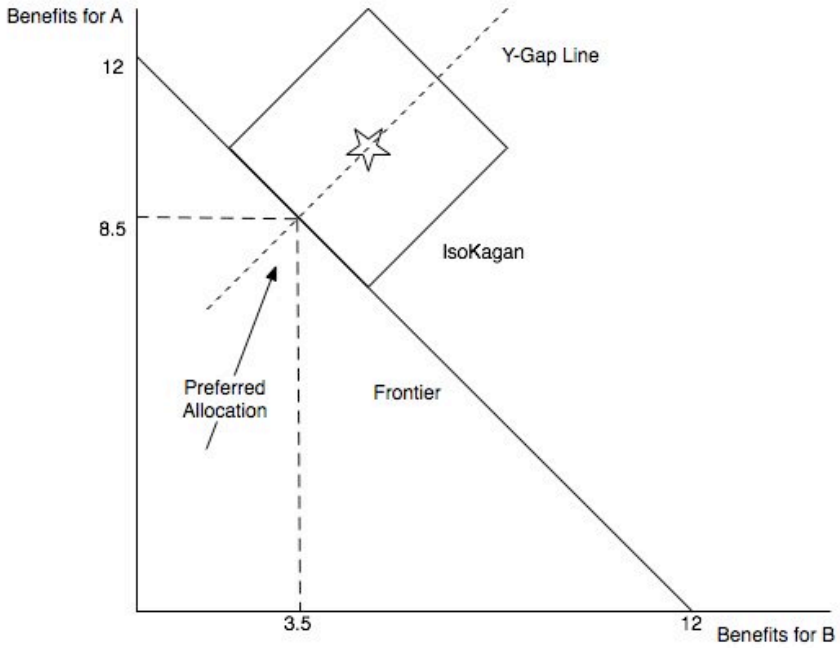

Figure 7

INEFFICIENT DESERT

So far, I have only considered cases where absolute desert is infeasible, i.e. where there are too few resources to give individuals what they deserve. This means that the only feasible distributions are sub-optimal from the perspective of desert, and we must select the allocation that is least bad from this perspective, allowing us to select an allocation that is both efficient and privileged by desert. However, desert might also be satisfied with less than all the available resources. For example, desert might require that A have 5 units of benefits and B have 3 units of

benefits. If there are still 12 units of benefits in society, desert can be satisfied with 8 units of benefits, and there will be 4 units left over. In this case desert would be satisfied with an inefficient distribution. The allocation is inefficient because in these cases it will always be possible to make one of the individuals better off with the left-over resources without making the other worse off. Efficiency requires that this be done, but this would make matters worse from the perspective of desert. If we gave all of the 4 units of surplus to A, this would be an improvement from the perspective of efficiency, but a worsening from the perspective of desert. In general, if the sweetspot lies within the Frontier, desert and efficiency are at odds.

One possibility to overcome this conflict is to adopt a dynamic rather than a static perspective. It was noted that sometimes desert requires more resources than are available while at other times it requires that certain resources remain unallocated. It is possible to borrow and save resources so that desert can be satisfied in an inter-temporally efficient fashion. Suppose that 12 units of goods are available in period *t*. Also suppose that A deserves 7 units and B deserves 3 units, leaving 2 units unallocated. Considered in isolation, distributing according to desert in period *t* may be inefficient. But now suppose that in period *t+1*, there are again 12 units available, but this time A deserves 5 units and B deserves 9 units, resulting in a shortage of 2 units. We may save the two units unallocated in *t* in order to cover the shortfall in *t+1*. In this way long run efficiency can be combined with giving individuals what they deserve. However, this will not resolve the principled conflict between desert and efficiency. For there is no reason to suppose that in the long run the shortages and the surpluses will even out. What individuals absolutely deserve and what resources are available are separate and unrelated issues. Just as it may be the case in one time-period that desert and efficiency are not in conflict, because the sweetspot lies on the frontier, so too it may be the case that in the long run the surpluses and deficits even out. But in both cases this is a matter of fortuitous circumstance. This is not to be relied on. When we are not so lucky, the conflict between desert and efficiency resurfaces. As that might often be the case, it is interesting to investigate how that conflict is to be resolved.

How this is to be done depends on one's priorities. I do not take a position regarding whether desert or efficiency should enjoy priority, but seek to understand the consequences of the two possible views. If one believes desert to be more important than efficiency, then one simply allocates according to desert, and discards or saves any benefits left over. In this case one is willing to accept inefficiencies for the purposes of satisfying absolute desert. The solution in this case is simple. However, one might also think it irrational to discard benefits that could be used to make individuals better off at no cost to anyone. If this is one's position, one gives efficiency a lexical priority. In this case a satisfactory allocation must first of all be efficient. Only then do other considerations, such as desert in this context, come into play. Those of this persuasion might ask which efficient allocation is preferred from the perspective of absolute desert.

The system of IsoKagans and Y-Gap points can help us here. Again one can construct a series of IsoKagans around the sweetspot. Assuming simple straight desert-curves, they will again take the shape of square diamonds, with a slope of –1 or 1. For each IsoKagan there will be 2 points that satisfy the requirements of subsidiary comparative desert, and these allow us to draw the Y-Gap line through the IsoKagans. This line will intersect with the Frontier, and this allocation will be the allocation that is efficient, with a minimum of deviation from the requirements of desert and which satisfies the requirements of supplementary comparative desert. This allocation seems to be preferred from the perspective of desert and efficiency, if the latter is given priority. See Figure 8.

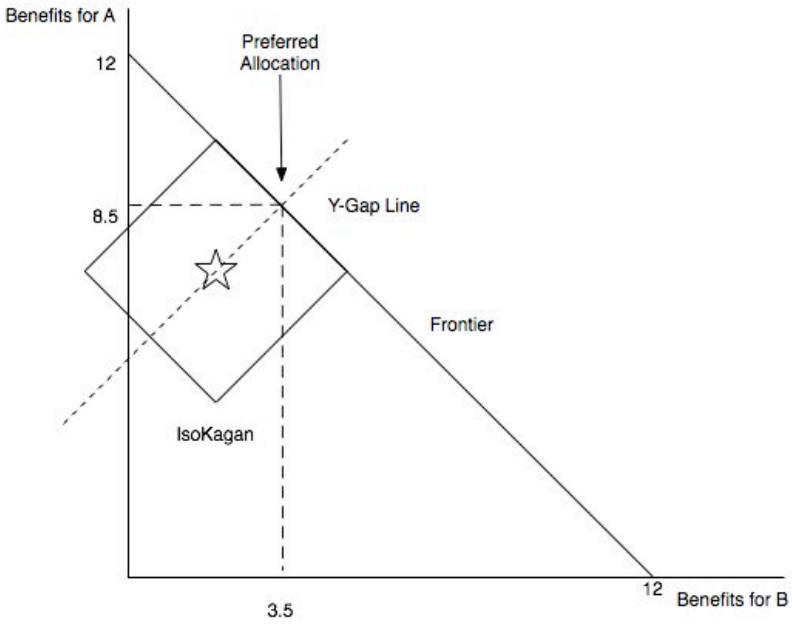

Figure 8

DIFFERENT CURVES

I have shown how desert and efficiency can be conceptualised in one theoretical framework, and how to select allocations that are optimal, or at least preferred from the perspective of these two desiderata. This has been greatly aided by the fact that the Frontier and the relevant section of the IsoKagans have had the same slope. To generate this happy result I have made several assumptions, primarily about desert. In particular I have assumed that the desert-curves were of a specific shape. This is the standard shape Kagan uses to represent desert, and as such this is a warranted assumption. However, Kagan also considers different desert-curves. These different desert-curves produce different IsoKagans. For example, Kagan introduces the idea of simple curved desert represented by parabolic desert-curves, as well as the idea of the bell motion. I will now consider the implications of these different desert-curves for the framework I have set out.

Simple curved desert is characterised by desert-curves that have a parabolic shape, as indicated in Figure 9.[21] Simple curved desert represents the intuition that taking a unit of benefits from an individual, or giving a unit of benefits to an individual, matters more the further the individual is from his peak. This means that as individuals stray from their peaks, matters get exponentially worse from the perspective of desert.

[21] Kagan, "Equality and Desert,", p. 301.

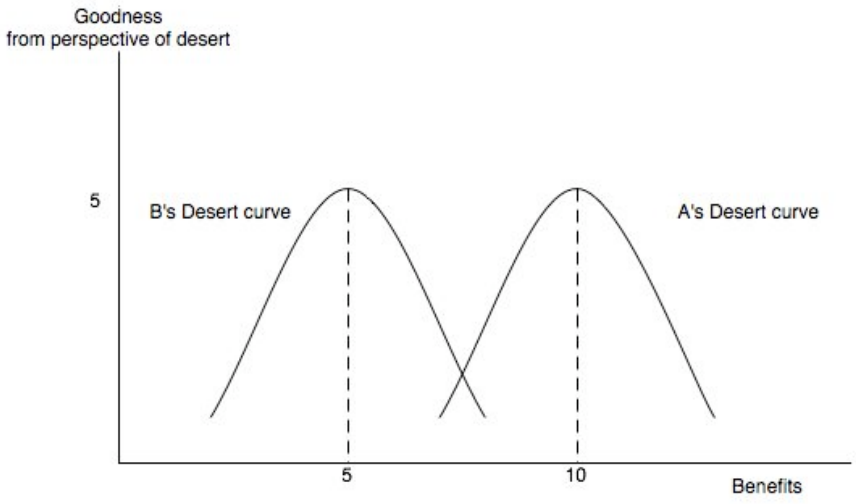

Figure 9

Simple curved desert also results in curved IsoKagans. Full proof is given in the Appendix, but it is easy to see that in cases of simple curved desert, the relationship between how far one is from the sweetspot and the associated loss of goodness is exponential. This relationship carries over in the IsoKagans. They will take the shape of a series of concentric circles around the sweetspot. To find the preferred efficient allocation, desert requires that one select the allocation on the Frontier that is on the best IsoKagan, as is indicated in Figure 10.

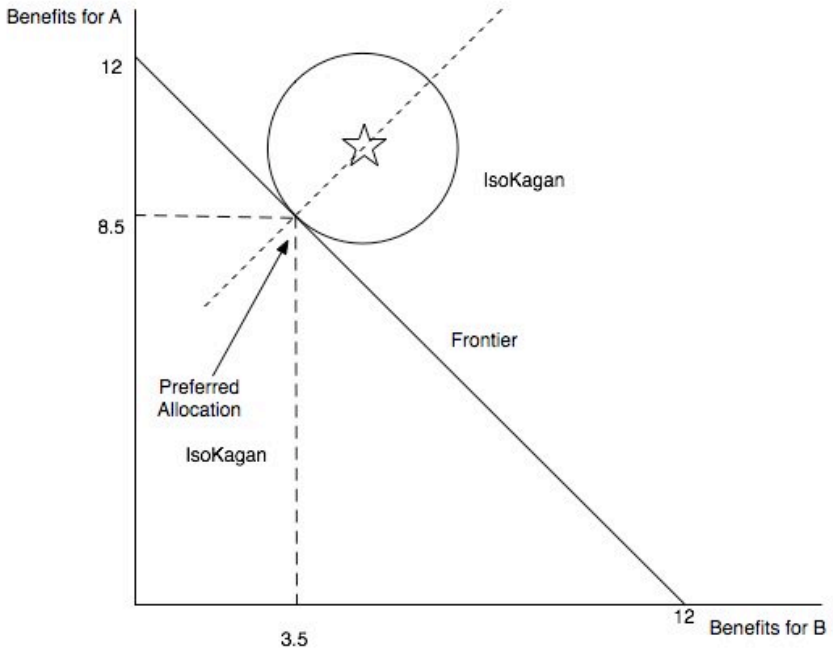

Figure 10

Note that if the IsoKagan is circular, there will be one unique allocation that represents the best efficient allocation from the perspective of desert, i.e. where the highest IsoKagan meets the Frontier. Because of this, there is no need to take recourse to the idea of supplementary comparative desert. However, this does raise the question as to whether the allocation singled out

in this fashion satisfies the requirements of supplementary comparative desert, i.e. if it is on the Y-Gap line. This is indeed the case; the Frontier will have a slope of –1, so the IsoKagan will also have a slope of –1 where it touches the Frontier. This will only be the case if both individuals are equally far from their peak, measured in terms of goodness.[22] So, in cases of simple curved desert, there will be a unique allocation that is efficient, is on the highest feasible IsoKagan, and satisfies supplementary comparative desert. This is a very interesting conclusion because it shows that for simple curved desert, there is no conflict between minimising the deviation from perfect desert and supplementary comparative desert. As we shall see, this is not always the case for other types of desert.

Another shape of desert-curve that Kagan introduces is characterised by the bell motion.[23] Although the curves have the same shape as what has been termed simple straight desert, they are tilted outwards. The intuition behind the bell motion is that it is worse for people who deserve little to have more than they deserve than it is for them to have less. Conversely, it is worse for those who deserve a lot to have less than they deserve than it is for them to have more than they deserve. The idea is that it is better to over-benefit saints than it is to short-change them, while sinners should rather be given less than they deserve than more. If one accepts this intuition, the desert-curves would look like Figure 11.

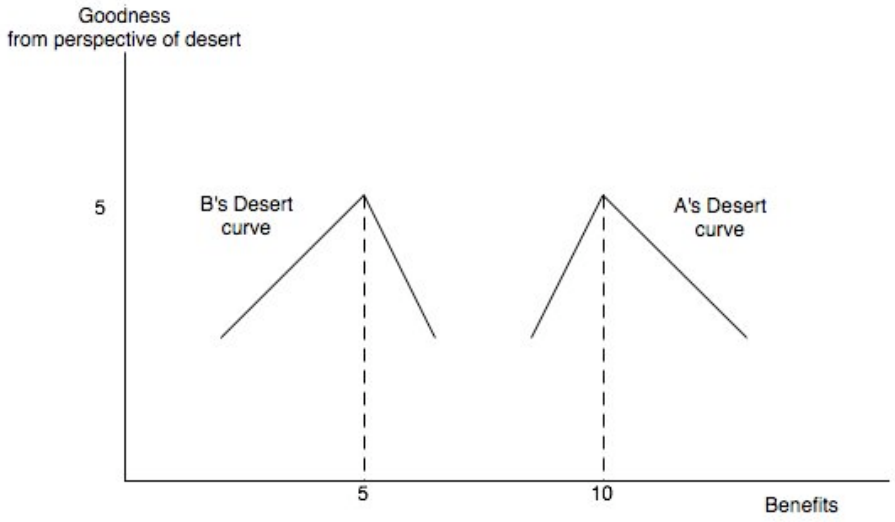

Figure 11

These desert-curves would result in a particular set of IsoKagans, which would be shaped in the form a series of concentric trapezoids. A proof is provided in the Appendix. This is because bell motion straight desert requires that deviations from desert in terms of benefits be given different weightings depending on the individuals in question, and which side of the peak they are on. Consider the desert-curves of Figure 11. They would result in IsoKagans like the one in Figure 12.

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[22] Assume that the IsoKagan is given by $x^2 + y^2 = 1$. Then the slope is given by $-\frac{x}{y}$. Setting this to –1, to match up with the Frontier, yields $x = y$, yielding a Y-Gap point, assuming both individuals are on the same side of their peaks.

[23] Kagan, "Equality and Desert,", p. 301.

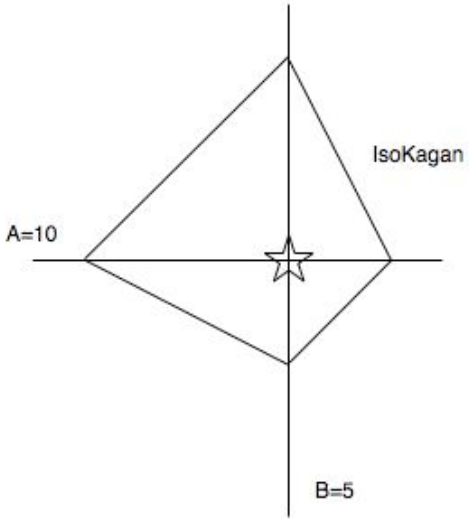

Figure 12

A deserves more than B, and for this reason, giving A one unit of benefits less than she deserves is worse than giving her one unit more than she deserves. This means that the points that are equally bad from the perspective of desert for A, will be closer on the south side of the sweetspot than on the north side of the sweetspot. Likewise, because B deserves less than A, giving B one unit of benefits less than he deserves is better than giving B one unit more than he deserves. This means that the IsoKagan will lie closer to the sweetspot on the east side of the sweetspot, than on the west side. This results in a trapezoid IsoKagan.

When we put trapezoid IsoKagans into the efficiency framework, the highest feasible IsoKagan will select an efficient allocation, probably giving A exactly what she deserves, and giving B far less than he deserves.

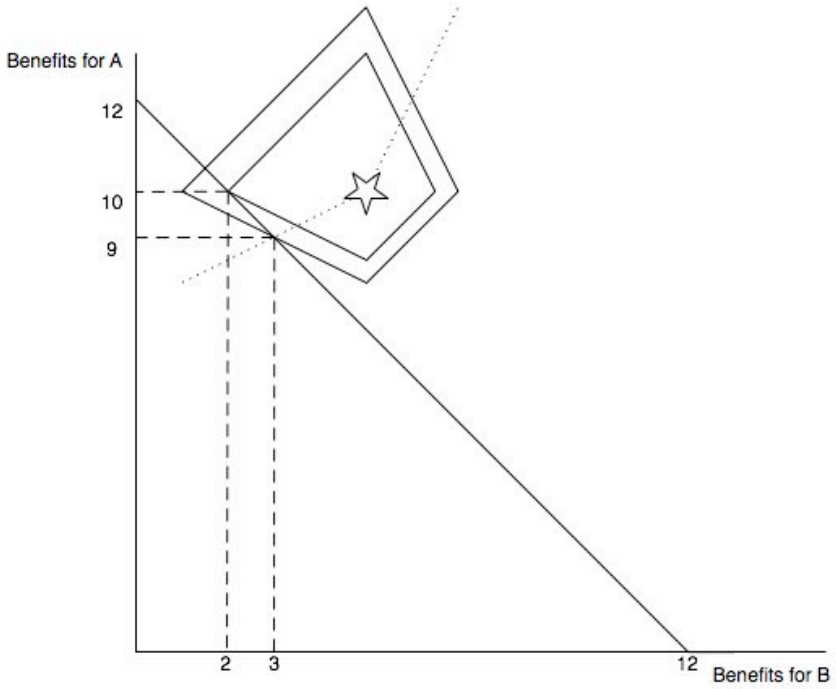

Figure 13

This allocation is the best efficient allocation from the perspective of bell motion straight desert. Interestingly enough, this allocation will not satisfy the requirements of supplementary comparative desert. For it does not share the deviation from desert equally among A and B; it is not a Y-Gap point. Any allocation that is efficient and lies on the Y-Gap line will be on a lower and less attractive IsoKagan. This means that the requirements of absolute and supplementary comparative desert are in conflict for bell motion straight desert. Hence one must decide whether to prioritize absolute desert over supplementary comparative desert. This is a very difficult issue, which requires further study, and which I cannot take up in this context.

What I have said so far only applies in cases where there are only two individuals. However, it is easy enough to extend the model. In the case of three individuals, the Frontier takes the form of a slanted plane, and the IsoKagan takes the shape of a cube, which will have a side that has the same slope as the Frontier. The Y-gap method will again select a preferred allocation of goods. In the case of simple curved desert, the IsoKagan will be a sphere, with 1 point touching the Frontier. Bell motion straight desert produces a pyramid without its peak. These IsoKagans will, just like in the case of 2 dimensions, touch the Frontier, selecting an allocation. Mathematically it is easy to extend the method to infinitely larger populations.

CONCLUSION

In this paper I have considered the relationship between desert and distributive efficiency. To facilitate this analysis I have integrated current theoretical work on desert into the economic theory of distributive efficiency. It allows us to see whether there are allocations that are optimal from the perspectives of desert and efficiency, as well as what allocations are second-best, when there are no optimal allocations.

The answers to these questions depend on how one conceives of desert. If one believes desert to be fundamentally comparative in nature, desert and efficiency can both be satisfied. This means that there will be an allocation that is both efficient and deserved. However, if one believes desert to be primarily absolute in nature, there will often be conflicts between the two desiderata. In these cases it will not be possible to satisfy both desert and efficiency. However, the system of IsoKagans and Y-Gap points allows us to see what the two ideals would require in a particular situation and to select an allocation that is normatively appealing from both the perspective of desert and efficiency.

APPENDIX – The Math Section

DRAWING ISOKAGANS

There are individuals, i_a, i_b, ... i_n, among whom we are distributing a fixed number of units of benefits. They deserve a specified amount of benefits, defined by the sweetspot. This allocation is given by the peaks, $p(i_a)$, $p(i_b)$, …, $p(i_n)$. An allocation, A, gives individuals particular amounts of goods, $a(i_a)$, $a(i_b)$, …, $a(i_n)$.

The desert function for an individual, $df(i_n)$, will specify how much goodness, g, is associated with i_n having a particular allocation $a(i_n)$. Call this $g_{a(in)}$. Filling in $a(i_n)$ in the $df(i_n)$ gives $g_{a(in)}$. The g for the peak is given by $g_{p(in)}$. So to determine how much goodness is lost by an individual having $a(i_n)$ rather than $p(i_n)$, one must take $g_{p(in)} - g_{a(in)}$. This value is never negative, as the peak is defined as the highest point in the desert-curve, and no allocation can be better than the peak, although it will be 0 if the allocation gives the individual what he or she deserves.

Then the total Deviation score for allocation A , $D_{(A)}$, is given by
$D_{(A)} = g_{p(ia)} - g_{a(ia)} + g_{p(ib)} - g_{a(ib)} + \ldots + g_{p(in)} - g_{a(in)}$
If everyone gets what they deserve, the $D_{(A)}$ will be 0. The higher $D_{(A)}$ the less good A is from the perspective of desert.

IsoKagans are collections of allocations that have the same Deviation score. By setting the formula for the Deviation score to a certain value, we can chart the IsoKagan.
$D_{(A)} = g_{p(ia)} - g_{a(ia)} + g_{p(ib)} - g_{a(ib)} + \ldots + g_{p(in)} - g_{a(in)} = k$

SUPPLEMENTARY COMPARATIVE DESERT

To select allocations that satisfy the requirements of comparative desert, the Y-Gap view of comparative desert imposes two further requirements. They allow us to select Y-Gap points.

1 All individuals must be on the same side of their peaks.
2 All individuals must suffer the same deviation from their peak, measured in terms of goodness. This requires
$g_{p(ia)} - g_{a(ia)} = g_{p(ib)} - g_{a(ib)} = \ldots = g_{p(in)} - g_{a(in)}$

Allocations which satisfy these conditions satisfy the requirements of supplementary comparative desert. They may be connected to draw the Y-Gap line.

Example of simple straight desert IsoKagans.

Simple straight desert is characterised by desert-curves that have constant slopes on either side of the peaks, are symmetrical relative to their peaks and are identical for both individuals. As such, they are discontinuous functions, and we must consider each side of each peak separately. This means that the D will be computed differently for each quadrant relative to the Sweetspot, S. I will assume the following desert-curves, with a peak for i_a at $p(i_a)=10$, and for i_b at $p(i_b)=5$. The slopes are 1 and –1 on either side, and the peaks have a goodness value of $g_{p(in)}= 5$. This corresponds to the example discussed in the main text.

$df(i_a)$: $g_{a(ia)}=a(i_a)-5$ if $a(i_a) \leq 10$

$g_{a(ia)}= 15- a(i_a)$ if $a(i_a)\geq 10$

$df(i_b)$: $g_{a(ib)}=a(i_b)$ if $a(i_b)\leq 5$

$g_{a(ib)}= 10- a(i_b)$ if $a(i_b)\geq 5$

For the quadrant in which $a(i_a)\leq 10$ and $a(i_b)\leq 5$, $D = 1$ yields

$D=5-(a(i_a)-5) + 5- a(i_b) = 1$

$a(i_a) = 14- a(i_b)$

This produces a straight IsoKagan with a slope of –1 for the SouthEast Quadrant.

For the quadrant in which $a(i_a)\leq 10$ and $a(i_b)\geq 5$, $D=1$ yields

$D=5-(a(i_a)-5) +5-(10-a(i_b)) = 1$

$a(i_a)= 4+a(i_b)$

This produces a straight IsoKagan with a slope of 1 for the SouthWest Quadrant.

For the quadrant in which $a(i_a)\geq 10$ and $a(i_b)\geq 5$, $D=1$ yields

$D=5-(15 -a(i_a)) +5-(10-a(i_b)) = 1$

$a(i_a)= 16-a(i_b)$

This produces a straight IsoKagan with a slope of -1 for the NorthWest Quadrant.

For the quadrant in which $a(i_a)\geq 10$ and $a(i_b)\leq 5$, $D=1$ yields

$D=5-(15 -a(i_a)) +5-a(i_b) = 1$

$a(i_a)= 6+a(i_b)$

This produces a straight IsoKagan with a slope of 1 for the NorthEast Quadrant.

Together, these functions define a square diamond IsoKagan.

Example of simple curved desert IsoKagans.

Simple curved desert is defined by desert-curves that have a parabolic shape, are symmetrical relative to the peak, and are identical for both individuals. They may be viewed as a continuous function, and we will not have to consider each quadrant separately. I will consider simple quadratic desert-curves, with a peak for i_a at $p(i_a)=10$, and for i_b at $p(i_b)=5$. Both peaks are associated with a level of goodness of $g_{p(in)}=5$. This follows the example given in the main text.

In this case of simple curved desert the Desert functions, *df* are:
$df(i_a)$: $g_{a(ia)}=-(a(i_a)-10)^2+5$
$df(i_b)$: $g_{a(ib)}=-(a(i_b)-5)^2+5$

The deviations for the individuals are given by
$Da(i_a) = 5 –(-a(i_a)^2+20a(i_a)-95)$
$Da(i_b)= 5 – (-a(i_b)^2+10a(i_b)-20)$
Setting $D=1$ gives
$D= a(i_a)^2-20a(i_a)+100 + a(i_b)^2-10a(i_b)+25 = 1$
This may be rewritten as
$(a(i_a) –10)^2 + (a(i_b)-5)^2=1$
This describes a circular IsoKagan, with $r=1$ and with an origin in the sweetspot where $a(i_a)=10$ and $a(i_b)=5$.

Example of bell motion straight desert IsoKagans.

In bell motion straight desert, *df* is different depending on where we are relative to *S*. Recall that the intuition behind the bell motion is that it is worse for people who deserve little to have more than they deserve than it is for them to have less. Conversely, it is worse for those who deserve a lot to have less than they deserve than it is for them to have more than they deserve. Hence bell motion uses different *df's,* depending on how deserving individuals are, and where they are relative to *S*. As such the desert-curves are discontinuous, as in the case of simple straight desert. I will assume the following desert-curves, with a peak for i_a at $p(i_a)=10$, and for i_b at $p(i_b)=5$. The peaks have a goodness value of $g_{p(in)}=5$. This corresponds to the example discussed in the main text.

$df(i_a)$:	$g_{a(ia)}=2a(i_a)-15$	if $a(i_a) \leq 10$
	$g_{a(ia)}= 15- a(i_a)$	if $a(i_a) \geq 10$
$df(i_b)$:	$g_{a(ib)}=a(i_b)$	if $a(i_b) \leq 5$
	$g_{a(ib)}= 15-2a(i_b)$	if $a(i_b) \geq 5$

For the quadrant in which $a(i_a) \leq 10$ and $a(i_b) \leq 5$, $D = 1$ yields
$D=5-(2a(i_a)-15) + 5- a(i_b) = 1$
$a(i_a) = 12-0.5a(i_b)$
This produces a straight IsoKagan with a slope of –0.5 for the SouthEast Quadrant.
For the quadrant in which $a(i_a) \leq 10$ and $a(i_b) \geq 5$, $D=1$ yields
$D=5-(2a(i_a)-15) +5-(15-2a(i_b)) = 1$
$a(i_a)= 4.5+a(i_b)$
This produces a straight IsoKagan with a slope of 1 for the SouthWest Quadrant.
For the quadrant in which $a(i_a) \geq 10$ and $a(i_b) \geq 5$, $D=1$ yields

$D=5-(15-a(i_a))+5-(15-2a(i_b))=1$
$a(i_a)=21-2a(i_b)$
This produces a straight IsoKagan with a slope of -2 for the NorthWest Quadrant.
For the quadrant in which $a(i_a)\geq 10$ and $a(i_b)\leq 5$, $D=1$ yields
$D=5-(15-a(i_a))+5-a(i_b)=1$
$a(i_a)=6+a(i_b)$
This produces a straight IsoKagan with a slope of 1 for the NorthEast Quadrant.
Together, these functions define a trapezoid IsoKagan.

BIBLIOGRAPHY

Ackerman, Bruce A. Social Justice in the Liberal State. New Haven: Yale University Press, 1980.

Broome, J. "Fairness." Proceedings of the Aristotelian Society 91 (1991): pp. 87-103.

Feinberg, J. "Justice and Personal Desert." Nomos Vi; Justice. Eds. C.J. Friedrich and J.W. Chapman. New York, NY: Atherton, 1963.

Kagan, Shelly. "Comparative Desert." Desert and Justice. Ed. Serena Olsaretti. Oxford: Oxford University Press, 2003. pp. 93-122.

---. "Equality and Desert." What Do We Deserve? Eds. L Pojman and O McLeod. Oxford, UK: Oxford University Press, 1997. pp. 298 - 314.

McLeod, Owen. "On the Comparative Element of Desert." Desert and Justice. Ed. Serena Olsaretti. Oxford: Oxford University Press, 2003. pp. 123-44.

Miller, David. "Comparative and Noncomparative Desert." Desert and Justice. Ed. Serena Olsaretti. Oxford: Oxford University Press, 2003. pp. 24-45.

Olsaretti, Serena. Desert and Justice. Mind Association Occasional Series. Oxford: Clarendon Press, 2003.

---. Liberty, Desert and the Market : A Philosophical Study. Cambridge: Cambridge University Press, 2004.

Pojman, Louis P., and Owen McLeod. What Do We Deserve? : A Reader on Justice and Desert. New York ; Oxford: Oxford University Press, 1999.

Ross, W.D. "What Things Are Good?" What Do We Deserve? Eds. L Pojman and O McLeod. Oxford: Oxford University Press, 1999. pp. 56-60.

Sandel, Michael. Liberalism and the Limits of Justice. Cambridge [Cambridgeshire] ; New York: Cambridge University Press, 1982.

Scanlon, Thomas. What We Owe to Each Other. Cambridge, Mass. ; London: Belknap Press of Harvard University Press, 1998.