

# Aristotle's Theory of Just Exchange

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# 1 Question

While Aristotle's ethical writings have been very influential, particularly through their influence on Scholastic thought, one part has defied interpretation: his theory of just exchange from the fifth book of the *Nicomachean Ethics*. There he claims

Therefore it is necessary that as the builder is to the cobbler, so many shoes are to the house. For without this, there is no exchange and no partnership.<sup>1</sup>

While this establishes general structure of just exchange as being an equality of two relationships, between the goods exchanged and the people exchanging them, Aristotle never specifies the exact nature of these relationships. Those commentators who have not given up, either declaring Aristotle confused or the passage irrecoverably ambiguous, have tried many approaches, but none seem satisfactory.<sup>2</sup> In this paper, I provide an explanation of marginal and equilibrium analysis, analytic techniques from modern economics, and then defend an interpretation of the passage as meaning that an exchange is just when the value of the goods, as measured by market price, is equal. I then critique and refine that theory, and discuss the relevance of Aristotle's position to modern discussions of justice.

## 2 Background

### 2.1 Marginal Analysis

I begin by introducing several concepts that deserve treatment at length, although they will not enter into the argument until much later. First of these is marginal analysis, the defining

<sup>1</sup>Aristotle, *Nicomachean Ethics*, ed. H. Rackham (Cambridge: Harvard University Press, 1932) 1133a22. “δεῖ τοίνυν ὅπερ οἰκοδόμος πρὸς σκυτοτόμον, τσσαδι ὑποδήματα πρὸς οἰκίαν [ἢ τροφήν]. εἰ γὰρ μὴ τοῦτο,

οὐκ ἔσται ἀλλαγὴ οὐδὲ κοινωνία.” Translation by the author.

<sup>2</sup>Scott Meikle, *Aristotle's Economic Thought* (Oxford: Clarendon Press, 1995) 133-134.

tool of post-classical economics. Central to this analysis is the insight that people decide to trade an additional unit of a good purely on the incremental value of that additional unit, unaffected by the value of the units already held. This answers the classic paradox of diamonds and water, that while water is a necessity and diamonds are luxuries, a small diamond commands the same price as a vast quantity of water. This disparity in value arises because almost everywhere diamonds are rare and water plentiful. A parched man in the desert might give up a diamond for little water if it was the only available, but in civilization far more water is available than is needed for drinking. Therefore, we value water based on its marginal uses—watering lawns and the like. While the first units of water are necessities, after a point additional water, too, is a luxury.

A further implication of marginal analysis is that marginal value usually decreases. There are exceptions, particularly in the case of goods best consumed in groups (two shoes are more useful than one shoe by far more than one shoe is more useful than none). However, if we consider these groups as a single good (note, for example, that shoes are usually sold in pairs), the first unit of a good goes to the most pressing need, the second to the second most, and so on. Thus, an individual's demand for a good is best expressed not as a single number but as a schedule, giving the marginal value of each unit. Here, I shall measure this marginal value by marginal willingness to pay (MWTP), the greatest price that the consumer would pay for the  $(n + 1)^{\text{th}}$  unit of a good if he already possessed  $n$  units of it. As a corollary, if two goods have the same MWTP schedule for all consumers, the more plentiful will command a lower price (since MWTP generally decreases with quantity held).

## 2.2 Equilibrium Analysis and the Aggregation of Preferences

Marginal analysis is a powerful tool for analyzing individual economic decisions. However, it raises a question of how individual preferences (of both suppliers and consumers) aggregate to determine market prices. Not only may each consumer value a good differently depending on the context, particularly how much of that good and close substitutes he already possesses, but each individual may have a unique MWTP schedule. Therefore, a description of the demand or supply for a good will be three-dimensional, describing the degree of preference (1) of each consumer (2) at each quantity possessed (3). Since both supply and demand cooperate to form the market price, and supply is likewise three-dimensional (the marginal willingness to supply a good by each producer at each quantity), the determinants of the equilibrium price have six dimensions of variation. Price, meanwhile, is one-dimensional, a single number; thus the determination of price must collapse the six dimensions to one.

Economists address this aggregation through equilibrium analysis, defining the market price as the price at which the market is in equilibrium, that is, each party is satisfied with his present condition, desiring neither to buy more nor to have bought less. Thus, assuming goods and money to be infinitely divisible and MWTP schedules continuous functions from quantity to marginal price, the MWTP of every consumer who purchases any quantity of a good must equal the market price. If it were higher, he would be willing to buy more, and the equilibrium broken; likewise if it were lower, he would prefer to sell, or to have bought less. The same analysis applies to producers, but with marginal cost of production substituted for MWTP: a producer does not want to be producing a good at a loss, or forgoing an opportunity to produce at a profit. A consumer who does not enter a market must have

MWTP for the first unit below the market price, and like wise a producer who does not enter must have a marginal cost for the first unit above the market price. Therefore, by the equilibrium definition of market price, there is a combination of price and quantity that simultaneously reflects the preferences of all consumers and producers.

The assumptions of infinitely divisible goods and money are unrealistic, but equilibrium analysis changes little when accommodation is made for discrete goods. Shoes, for example, usually come in pairs; a fractional shoe is not useful as a shoe, and therefore does not belong to the same class of goods. Therefore, it is possible that at equilibrium MWTP and marginal cost may differ somewhat from the market price, so long as the price is between the MWTP of the last unit purchased and the next (for the consumers; between the cost of the last unit produced and the next for the producer). If our builder has a MWTP for one pair of shoes of \$20 and for a second \$10, the market price is \$15, and he owns one pair of shoes, he is in equilibrium: he wanted to buy the first, since the MWTP of \$20 exceeded the \$15 that he actually had to pay, but he does not want to buy a second, since that price exceeds his MWTP for a second pair.

### **2.3 Commensurability and Aristotle's Use of Ratios**

Aristotle holds that justice is defined between two people as the equality of the ratios between receipts and deserts, and consequently talk of ratios and commensurability pervades his arguments throughout Book V of the *Nicomachean Ethics*. Each ratio is a proportion of quantifiable properties, such as number or mass; equality of ratios demands both equality of the numerical proportions and correspondence of the units. This does not mean that

the units must be identical, but that there must be a natural relation between them—a length given in feet can be equal to a length given in metres, since both measure length and thus differ only by a ratio (approximately 3.28 feet per metre). In cases where there is no natural relation between two units, there may be a postulated one; one can, for example, convert between units of a good and money at a price (so many dollars per unit), despite the units not being equivalent. When quantities thus can be put in equivalent units they are commensurable.

Moving to some of the examples of units relevant to Aristotle's theories, the pair of ratios “two shoes per house” and “two hours per house over one hour per shoe” are equal; in modern notation, these correspond to

$$\frac{2 \text{ shoes}}{1 \text{ house}} = \frac{2 \frac{\text{hours}}{\text{house}}}{1 \frac{\text{hour}}{\text{shoe}}}$$

the hours on the right cancel, and multiplying the right side by shoes times houses over shoes times houses (which preserves equality since the units cancel; this is equivalent to multiplying by one) yields

$$\frac{2 \text{ shoes}}{1 \text{ house}} = \frac{2 \text{ shoes}}{1 \text{ house}}$$

Important here is that the original right-hand-side had hours in both the numerator and the denominator; these cancel, and do not disrupt the commensurability of units. However, the pair of ratios “two shoes per house” and “two builders per shoemaker” are not equal, for in the equation

$$\frac{2 \text{ shoes}}{1 \text{ house}} = \frac{2 \text{ builders}}{1 \text{ shoemaker}}$$

the numerical components match, but the units do not.

This analysis means that commensurability is a criterion for equality: no length of time is equal to a length of distance, unless some conversion rate is specified. Given such a conversion rate, the two can be compared;

$$1 \text{ second} \neq 2 \text{ feet}; 1 \text{ second} \cdot \frac{2 \text{ feet}}{1 \text{ second}} = 2 \text{ feet} \cdot \frac{1 \text{ second}}{1 \text{ second}} = 2 \text{ feet}$$

However, while multiplying by a natural conversion preserves equality absolutely, multiplying by a merely posited one does not. In a different context, the conversion “three feet equals one second”, or “three feet over one second equals one” might be the applicable standard.

Moreover, putting units in proportional equality requires that both admit cardinal quantification, numeric representation such that not only the order of numbers but also the ratios between them are meaningful. First is equal to first and before second, but one cannot say

$$\frac{\text{first}}{\text{second}} = \frac{\text{third}}{\text{fourth}};$$

such ratios of ordinal positions are meaningless. After a race, one could not say “the ratio of the first place over the second equals the ratio of the third over the fourth”, but one could say “the ratio of the first place runner’s time over that of the second equals the ratio of that of the third to that of the fourth”; the order of finish is an ordinal measurement, the time of finish a cardinal.



## 3 Interpretation

### 3.1 Text

Aristotle treats justice at length in the fifth book of the *Nicomachean Ethics*. He first distinguishes between a general and specific sense of justice. In the first, justice is the whole of virtue, and any unlawful (by the moral law) action is unjust in this sense.<sup>1</sup> In the particular sense, injustice is taking more than one's share of the good or less than one's share of a bad, and particular justice the inverse;<sup>2</sup>the just is thus the equal, where actual portions correspond to deserved share.<sup>3</sup> Within particular justice, he distinguishes between distributive and corrective justice, the former covering the division of community assets and the latter private transactions.<sup>4</sup> Among these private transactions Aristotle further distinguishes between voluntary and involuntary, deeming voluntary those transactions in which all parties consent to the existence of the transaction, and involuntary those in which one party is unwilling or not given a choice. Thus he deems voluntary but unjust not only usury, in which both parties consent to the rate charged, but also fraud, in which the defrauded party consents to details of a transaction other than the one that takes place; in fraud the victim of the injustice had the option of refusing the transaction, despite lacking the information to make that choice in his own interest. Accordingly, Aristotle does not hold consent to be a sufficient criterion for justice (although interestingly he does not draw an exception for free and informed consent, as shown in usury). Correspondingly, involuntary transactions are those such as assault and theft in which at least one party did not consent

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<sup>1</sup>Aristotle, *Nicomachean Ethics* V.1.20.

<sup>2</sup>ibid. V.ii.9.

<sup>3</sup>ibid. V.ii.8.

<sup>4</sup>ibid. V.ii.12.

to the very existence of the interaction.<sup>1</sup>

Despite these distinctions, Aristotle sees a common pattern to justice. Since the unjust is the unfair, and the unfair the unequal, justice is the equal.<sup>2</sup> Moreover, since equality is a mean (between the two possible directions of inequality), justice is also a mean.<sup>3</sup> Now a mean requires two extremes between which the mean lies, and an equality two shares to be equal. Moreover, justice requires people for whom something is just.<sup>4</sup> Aristotle concludes that to satisfy all these requirements, “There will be the same equality between the shares as between the persons”;<sup>5</sup> that is, justice is satisfied if and only if the ratio of receipts is equal to the ratio of parties (following the standards outlined in section 2.3).

Under Aristotle’s taxonomy, trade, as a private transaction, falls within the scope of corrective justice,<sup>6</sup> where the purpose of justice is to correct unjust losses. In a just transaction, corrective justice merely affirms that the transaction is just; in an unjust transaction, corrective justice determines the just result and assigns compensation and penalties to the parties to achieve that result. Therefore, the penalties of corrective justice have no concern for deterrence of future injustice or rehabilitation of the wrongdoer; they aim merely to right the past wrong. This means that people are to be treated as equal, “For it makes no difference whether a good man has defrauded a bad man, or a bad one a good one”.<sup>7</sup> But to fulfill that purpose, one must have a standard for equality; this leads to Aristotle’s cryptic prototypes of just exchange:

Thus it is necessary for the builder to receive from the cobbler his work, and and

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<sup>1</sup>ibid. V.ii.13.

<sup>2</sup>Aristotle, *Nicomachean Ethics* V.iii.1-3.

<sup>3</sup>ibid. V.iii.3-4.

<sup>4</sup>ibid. V.iii.4.

<sup>5</sup>ibid. V.iii.6, “καὶ ἡ αὐτὴ ἔσται ἰσότης ὡς καὶ ἐν οἷς” Translation by Rackham.

<sup>6</sup>ibid. V.iv.1-2.

<sup>7</sup>ibid. V.iv.3, translation by Rackham.

to give to him from his own...<sup>1</sup>

Therefore it is necessary that as the builder is to the cobbler, so many shoes are to the house. For without this, there is no exchange and no partnership. And, unless these are somehow equal, this cannot be.<sup>2</sup>

Then there will be reciprocal proportion whenever they are equated, so that as farmer is to cobbler, so the work of the cobbler is to that of the farmer.<sup>3</sup>

Since there cannot be equality without commensurability,<sup>4</sup> the satisfaction of this ratio demands one standard by which all commodities can be compared,<sup>5</sup> and another for the transacting parties. Yet in none of these passages does Aristotle specify these bases for comparison, even as he notes their criticality to the feasibility of his criterion. It is here that the controversy over the meaning of this passage has concentrated: how are we to measure “farmer to cobbler”, or “the work of the cobbler to that of the farmer”?

### 3.2 Criteria

In evaluating the competing interpretations of the passage, I propose three criteria for a plausible interpretation. First, the explanation must justify the commensurability, providing cardinal quantifications for both goods and producers such that both ratios have the same units. Second, this justification of commensurability must be measurable; Aristotle seeks a basis for correction, and a proof that these ratios can be equal does not further that end if the units that provide commensurability cannot be measured. Lastly, the interpretation must be contextually sensible; while the context does not yield an obvious interpretation of

<sup>1</sup>Aristotle, *Nicomachean Ethics* 1133a8, “δεῖ οὖν λαμβάνειν τὸν οἰκοδόμον παρὰ τοῦ σκυτοτόμου τὸ ἐκεῖνου ἔργον, καὶ αὐτὸν ἐκεῖνῳ μεταδιδόναι τὸ αὐτοῦ.” Translation by the author.

<sup>2</sup>ibid. 1133a22, “δεῖ τοίνυν ὅπερ οἰκοδόμος πρὸς σκυτοτόμον, τοσαυτὰ ὑποδήματα πρὸς οἰκίαν [ἢ τροφήν]. εἰ γὰρ μὴ τοῦτο, οὐκ ἔσται ἀλλαγὴ οὐδὲ κοινωνία. τοῦτο δ', εἰ μὴ ἴσα εἶη πῶς, οὐκ ἔσται.” Translation

by the author; I omit “ἢ τροφήν” (“or food”) as an interpolation, following Rackham.

<sup>3</sup>ibid. 1133a31, “ἔσται δὲ ἀντιπεπονθός, ὅταν ἴσασθῆ, ὥστε ὅπερ γεωργός πρὸς σκυτοτόμον, τὸ ἔργον τὸ τοῦ σκυτοτόμου πρὸς τὸ τοῦ γεωργοῦ.” Translation by the author.

<sup>4</sup>ibid. V.v.14.

<sup>5</sup>ibid. V.v.11.

these prototypes, an adequate interpretation should rely on concepts and concerns familiar to Aristotle.

### 3.3 Aquinas and Marx

Thomas Aquinas, in his 13<sup>th</sup>-century commentary on the *Nicomachean Ethics*, holds that commensurability is to be sought in value, for “although a house is worth more than a sandal, nevertheless, a number of sandals are equal in value to one house”.<sup>1</sup> However, without a specification of this value this merely restates the problem, and Aristotle obliges: as many more sandals must be exchanged for the house as the builder’s efforts and materials to build the house exceed the cobbler’s labour and costs in making the sandal. Thus, Aquinas holds that the goods exchanged should be measured in units, and the worth of the makers in labour plus costs. For example, if the sum of labour and material costs required to make a shoes were one denarii and for a house 4d, in the just exchange we have

$$\frac{4 \text{ shoes}}{1 \text{ house}} = \frac{4 \frac{\text{d.}}{\text{house}}}{1 \frac{\text{d.}}{\text{shoe}}}$$

Or equivalently, the quantity of shoes times the cost per shoe (Aristotle’s conception of the value of a shoe) should equal the quantity of houses times the cost per house, for

$$\frac{4 \text{ shoes} \times \frac{1 \text{ d.}}{\text{shoe}}}{1 \text{ house} \times \frac{4 \text{ d.}}{\text{house}}} = 1$$

Aquinas recognized Aristotle’s concern for commensurability, and his solution satisfies

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<sup>1</sup>Thomas Aquinas, *Commentary on the Nicomachean Ethics*, trans. C. I. Litzinger (Chicago: Henry Regnery Company, 1964) 980.

the demand with respect to Aristotle's equation: as evident in the second formation, the shoes cancel within the numerator and the houses within the denominator, and the denarii between the two, leaving a unitless scalar. However, there is an internal commensurability challenge: Aquinas asks us to add labour and costs, without specifying a measurement of either. This is a particular problem since Aristotle deals with a barter economy, in which producers exchange products, rather than trading their products for money. The material factors have a price, but the labour does not. Aquinas cannot even appeal to a relative wage in terms of the specific products in question, for it is the ratio of worth of these products that Aristotle here attempts to determine. I thus find Aquinas's solution unsatisfactory—while his choice of units satisfies commensurability, their calculation is circular: determining the value of an artisan's labour requires knowing the value of his product, but Aquinas uses the value of the labour in determining the value of the product.

Marx takes Aristotle as despairing of finding a base for commensurability and presents his own, undifferentiated labour (labour measured purely in time, without adjustment for the skill of the labourer).<sup>1</sup> He otherwise follows Aquinas's ratio, but where Aquinas puts the sum of labour and cost of material factors, measured in money, Marx puts the ratio of time spent in production. This avoids both the internal commensurability problem of adding labour and the other factors, as Marx seems to ignore the latter, and the circularity of appealing to a wage not yet determined. But Marx had cause to not claim it as a presentation of Aristotle's opinion, for Aristotle rejects undifferentiated labour, maintaining that workers of differing skill deserve differing wages.<sup>2</sup> That aside, Marx's solution is unsuitable on its own

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<sup>1</sup>Karl Marx, *Capital: a critique of political economy* (1981) 151-2.  
<sup>2</sup>Aristotle, *Nicomachean Ethics* V.v.9.

merits. A jeweler could not trade a gold trinket that took him an hour to make for a shoe that took the same time for a cobbler to make, as he would lose on the transaction due to his greater material factor costs (gold is dearer than leather). Moreover, having a means of comparing the cost of non-labour inputs does not help without a means of rendering such commensurable with labour, since the final ratio of prices between the products varies with the relative worth assigned to labour and material factors. If labour is dear, the shoe and trinket are closer in value; if cheap, the trinket becomes relatively more expensive. Therefore, an adequate explanation of costs requires not only a means of comparing the value of two quantities of labour or two quantities of material factors, but also a means of comparing labour and material factors.

### 3.4 Supply Versus Demand

A greater worry overhangs both these interpretations, as hinted in Aquinas's analysis of Aristotle's treatment of money and demand.<sup>1</sup> He accepts Aristotle's claim that demand measures all things and that the final commensuration of goods is in terms of money. This puts Aristotle between a barter and money economy; his prototype of exchange is of goods being traded for each other (barter), but he relies on the existence of market prices, and thus trades of goods for money to set those prices, to determine the just ratio of goods in barter. The likely reason is that Aristotle did not recognize exchange value, and thus held that money was without proper worth. He would accept a trade of a good for money, but only if the money was to be subsequently exchanged for useful goods.<sup>2</sup>

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<sup>1</sup>Aquinas 981.

<sup>2</sup>Aristotle, *Politics*, trans. H. Rackham (Cambridge: Harvard University Press, 1932) 1258b5.

Aquinas explains this reliance on demand instead of intrinsic worth as the measure of goods in exchange by example; the mouse has greater dignity than the pearl (as a sentient animal), yet the pearl is sought after and the mouse reviled; people pay to acquire the pearl and be rid of the mouse. Yet Aquinas's own criterion for just exchange conflicts with this agreement, since in exchange he evaluates goods by their cost of production, not by the demand for their consumption. And Aristotle's emphasis is properly placed: it is not the production of goods that necessitates exchange but their consumption, and the consequent demand for the goods produced by others.<sup>1</sup> If no one desired shoes, it would not matter how difficult they are for the cobbler to produce; what no one wishes to buy does not command any price (the marginal willingness to pay is never positive). Conversely, what is demanded commands a price regardless of the difficulty by which any one seller comes by his stock; a quarter found on the sidewalk buys no less than one earned by hard labour. Thus, it seems that in interpreting Aristotle, Aquinas erred first by attempting to value goods by the difficulty of their production. More promising are metrics based on demand for goods.

A modern commentator on Aristotle's economic theory, Scott Meikle, makes a related argument from Aristotle's taxonomy of justice. In all previous applications of Aristotle's framework of justice as the equality of ratios, the ratio of the persons referred to the ratio of their merit. Moreover, Aristotle argues that for corrective justice the parties must be treated as equal, regardless of their merit for purposes of distributive justice.<sup>2</sup> Generally, justice is satisfied when people benefit in proportion to their contribution. In distributive justice, the contribution encompasses all contribution to society, and so the good man, whose actions

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<sup>1</sup>Aristotle, *Nicomachean Ethics* V.v.11.

<sup>2</sup>Meikle 136.

benefit others, has title to more than the bad man, whose actions harm others.<sup>1</sup> However, Aristotle takes private transactions as more limited in scope, with only the contribution to the particular transaction considered. A shoe from a bad man is just as useful as a shoe from a good man, and should command the same price. Therefore, a transaction is just when the values of the goods traded are equal, not when they correspond to the ratio of general merits that Aristotle would use to determine distributive justice between the parties.

While trust does command a premium in the market, this is not an exception to the principle of strict reciprocity in just exchange. A trustworthy man pays lower interest not because he is good *per se*, but because he is more likely to repay the loan. A promise from a reliable man for future payment or delivery is intrinsically more valuable than the same promise from an unreliable man, and so it can command more in exchange without contradicting reciprocity. If the untrustworthy man could get a trustworthy man to pledge security, he could command the same rates as the trustworthy man in his own private dealings. Likewise, a more honest worker may command higher pay because he is less likely to take shortcuts or short quality. But here again, the better worker is payed more not directly because he is better morally, but because his product is likely to be superior. In general, while there are many ways in which the product of the better man may be expected to be more valuable than that of the worse man, since those differences create a difference in product they do not conflict with Aristotle's contention that the merit of the parties to a private transaction should not be considered. A conflict would have to be a moral attribute that creates no reason to prefer or avoid trade with those who possess it but nevertheless creates a just difference in remuneration.

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<sup>1</sup>Aristotle, *Nicomachean Ethics* V.iv.2.



Therefore, the ratio of builder to cobbler must be unity, and so we can simplify Aristotle's equality of ratios to the simpler criterion that the goods exchanged must be equal by some measure. This plainly rules out the obvious choice of using units, both because Aristotle explicitly allows for goods to have unequal worth<sup>1</sup> and because this would not yield commensurability: shoes is not a unit that can be used to measure houses, so we would be left with the equality

$$m \text{ shoes} \stackrel{?}{=} n \text{ houses},$$

which plainly can never be true. Meikle contends that there must be an unexplained constant by which the ratio of goods is multiplied, so that the exchange is just when the number of shoes is some multiple of the number of houses.<sup>2</sup> This does yield commensurability (such a ratio would have units of houses over shoes, which would cancel with the units of the ratio):

$$\left( k \frac{\text{houses}}{\text{shoes}} \right) \cdot \frac{m \text{ shoes}}{n \text{ houses}} = k \frac{m}{n} \stackrel{?}{=} 1.$$

However, he does not find an analysis of this constant, so his proposal violates the criterion of measurability. If his interpretation were true, one could not know which transactions were just, only that it is possible for transactions to be just, even though he acknowledges that Aristotle's purpose in these passages is to find a calculable criterion for justice in exchange.<sup>3</sup> Thus, while I accept his reduction of the problem, I still seek an analysis of this constant defining the relative value of the goods.

Crucial, I think, is the subtlety of Aristotle's claim that "Though therefore it is impossible

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<sup>1</sup>Aristotle, *Nicomachean Ethics* V.v.15.

<sup>2</sup>Meikle 142.

<sup>3</sup>Meikle 133.

for things so different to become commensurable in the strict sense, our demand furnishes a sufficiently accurate common measure for practical purposes.”<sup>1</sup> Since houses and shoes differ so greatly, no one-dimension measurement can capture all the respects in which they may be compared. A collection of houses and a collection of shoes could be compared by counting the number of items in each, or by summing their masses, or the number of hours labour of work that went into them. But only by coincidence would two of these measures yield the same ratio of the collections, and only for qualitatively identical collections of goods would all possible measures fail to find a difference. One could, conceivably, describe all the differences between a house and a shoe as a pair of vectors, where each imaginable way to describe their difference—size, weight, shape, or such—could be reduced to the difference between some pair of elements or of subvectors. But that would not bring us closer to being able to tell how many shoes equal a house. One cannot express the difference between the 2-tuples  $(3, 4)$  and  $(5, 12)$  as a ratio, nor can one tell how many of the first equal the second. One could measure the two points by distance from the origin; the first is five units away, the second thirteen, so one could say that thirteen of the first are equal to five of the second in that respect, summed distance from the origin. Or one could compare them on the basis of the second coordinate alone, and say that the second is equal to three of the first. But in order to put things into a ratio, all their dimensions of difference must be reduced to one, necessarily losing information along the way (so that by this single-dimensioned measure, some different things appear equal). This is natural: no number of shoes are the same as a house, so to fulfill an equation in which a number of shoes equal a house, a standard of equality must be chosen so that qualitatively distinct objects are deemed equal (in other words, equality for the purpose of exchange should be an equivalence relation, partitioning

all that could possibly be exchanged into non-trivial equivalence classes).

Therefore, the challenge is to find the one dimension of comparison that can capture the differences between shoes and a house that matter in exchange. And Aristotle points the way forward: since demand is the foundation of exchange, demand should be the foundation of the measure by which we compare goods for the purpose of exchange.

### 3.5 An Interpretation of Aristotle

I therefore take Aristotle to have intended the ratio of producers to be the ratio of their respective worths, equal for the purposes of corrective justice (and thus far I follow Meikle), and the ratio of goods to be the ratio of the demand for each quantity (not the demand per unit, but demand per unit times the number of units being traded). This satisfies commensurability, for the units are commensurate in the equality

$$\frac{\left(\frac{x \text{ demand}}{m \text{ shoes}}\right) \cdot (m \text{ shoes})}{\left(\frac{y \text{ demand}}{n \text{ houses}}\right) \cdot (n \text{ houses})} = \frac{x \text{ demand}}{y \text{ demand}} = \frac{x}{y} \stackrel{?}{=} 1.$$

However, Aristotle recognizes that demand is itself unobservable; this analysis of Meikle's constant does not solve the problem of immeasurability. But knowing this, Aristotle proposes a solution, saying that absent distortions prices follow demand, and thus that "money constitutes in a manner a middle term, for it is a measure of all things", including "how many shoes are equivalent to a house".<sup>1</sup> Thus, in the end Aristotle concludes that a transaction is just provided that the price of the goods exchanged is equal. While it is the significance of

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<sup>1</sup>Aristotle, *Nicomachean Ethics* 1133b18, "τῆ μὲν οὖν ἀληθείᾳ ἀδύνατον τὰ τοσοῦτον διαφέροντα σύμμετρα γενέσθαι, πρὸς δὲ τὴν χρεῖαν ἐνδέχεται ἰκανῶς." Translation by Rackham.

<sup>1</sup>Aristotle, *Nicomachean Ethics* V.v.10, translation by Rackham.

demand that justifies the use of money, “demand has come to be conventionally represented by money”,<sup>1</sup> so we may use money in place of immeasurable demand when calculating the justice of a particular transaction. Since money is measurable, this interpretation fulfills also the second criterion, that an adequate interpretation should allow for the actual calculation of whether a transaction is just. Lastly, it is conceptually consistent with Aristotle’s arguments throughout, accommodating his concern for commensurability and demand as the foundation of exchange.

In summary, I take Aristotle to argue that justice requires an equality of goods exchanged, that the commensurability thus required is according to demand, and that demand can be measured by market prices. Accordingly, I hereafter refer to the criterion of equality of prices as Aristotle’s criterion.

## 4 Evaluation

### 4.1 Marginal Analysis and a Refinement of Aristotle’s Criterion

I believe that more recent developments in economic theory, marginal analysis and equilibrium theory, support Aristotle’s criterion but raise difficulties with his justification. The first problem arises from the fact (explained in section 2.1) that even for an individual consumer, demand is not a single intensity but a schedule relating quantity already possessed and marginal demand for the next unit. Aristotle equivocates on two senses of demand, the desire for something and the intensity of that desire. In the first sense, demand is binary: someone demands a good provided that he is willing to give up something in exchange for it.

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<sup>1</sup>ibid. V.v.11, translation by Rackham.

It is in this sense that demand is the foundation of exchange, in that exchange can occur only when each party demands what the other is able to provide. But while in this limited sense demand is a prerequisite for exchange, that binary conception does not provide enough information to support a cardinal evaluation of goods—that requires asking not “Would you give up something in exchange for this?”, but “How much would you give up in exchange for this?”. This stronger conception of demand thus does not have the primacy for exchange that Aristotle accords to it; one only purchases what he desires to some extent, but can purchase the little desired as well as the greatly. Moreover, marginal analysis shows that even Aristotle's reduction of the difference between goods to intensity of demand does not go far enough; to come all the way to a single dimension there must also be a specification of the quantity at which the marginal demand is to be evaluated.

While one can find many plausible specifications for this quantity, the difference between different people's demand imposes an important constraint: unless the quantity is chosen such that every person's marginal demand is equal, the problem of condensing marginal demands becomes a problem of condensing different people's demands. For example, one could evaluate each person's demand schedule at the average quantity possessed, but then the rich would normally be willing to pay much more for an additional unit than the poor, since they should have, on balance, the same wants (or greater, as they are accustomed to luxury) and more money to spend to satisfy those desires. Whose demands should be favored?

This problem can be avoided by choosing the quantity actually possessed by each person who chooses to buy, and ignoring the demand of those who do not buy (this is necessary to give a consistent price; the possible injustice to the poor will be considered later when discussing wealth effects (section 4.3)). Assuming an open market, if someone's MWTP for

a good is greater than the marginal price, he can simply buy more, until his consumption causes the price to rise or his MWTP drops to the market price. Likewise, someone will not voluntarily buy a good if its price is above his MWTP. Therefore, disregarding slight errors for discrete goods, the MWTP of the last good bought should be equal to the marginal price, and there is no further need to aggregate individuals' preferences. But this relies on having a market quantity at which to evaluate the schedules, and a natural place to turn is to the supply I have thus far ignored. Like consumers, potential producers have marginal schedules, here showing the price it would take to convince them to produce a marginal unit (the marginal cost), but where MWTP decreases with quantity, this marginal cost increases. The market quantity is thus the quantity at which supply and demand match. Even though demand drives exchange, the just ratio of exchange in Aristotle's framework is a function of both the supply and demand schedules.

This makes sense: to go back to the classic paradox of diamonds and water, the exchange value of diamonds and water cannot be resolved purely by looking at demand. While their prices do correspond to the marginal value against their typical accessibility, that is a product of circumstance; if both were scarce, the water would be far more valuable. In order to explain the difference in exchange value, we must look to how much easier water is to procure. Exchange is not, as Aristotle thought, based on demand, but on a combination of demand and ease of procurement. That which no one desires is not exchanged, but neither is that which is too easily procured: everyone desires air, but only in exceptional circumstances is it traded.

I therefore propose as a refinement of Aristotle's criterion that a transaction is just provided that the market prices are equal, where the market price is the MWTP at the

quantity purchased of those who participate in the market. This is indistinguishable in practice from Aristotle's criterion, for in the end he also evaluates goods by their price. However, the motivation is different: instead of holding that the price is a conventional measure of a one-dimensional demand, I turn to the market price as the equilibrium of marginal demand and marginal supply, the twin foundations of exchange.

## 4.2 Discussion

In general, this justification of Aristotle's criterion from marginal analysis does much better than Aristotle's own justification at dealing with the great variety of individual preferences. While Aristotle values goods in terms of a single quantity of demand, uniform across all people and circumstances, the justification of using market prices by appealing to marginal demand explicitly acknowledges and handles differences in individual demand schedules. If someone participates in the market, their marginal demand equals (within a certain approximation, given discrete goods and prices) the market price, as otherwise they would change their consumption until it did. However, this will not hold in two circumstances.

First, people must reach that quantity somehow. Suppose that the market price for shoes is 10d, and that someone has a MWTP of 15d for a first pair and 10d for a second. Since his MWTP exceeds the market price at some quantity, he will enter the market (specifically, he will necessarily buy the first pair and is indifferent about the second; if his MWTP continues to strictly decline, he will not buy a third pair). But he cannot just buy a second pair of shoes; he must at some point buy a first, and in that transaction his MWTP exceeds the price asked in that transaction. If we are to equate price with MWTP, should he not pay

that higher price for his first pair? However, an exact equation of price and MWTP cannot be our criterion of justice. If a cobbler is voluntarily selling shoes for 10d, the value he places on the shoes must be no greater. Therefore, if we demand that price equals MWTP, he and his prospective customer are at an impasse: if they trade below 15d, the transaction would be unjust from the consumer's perspective; if above 10d, it would be unjust from the cobbler's perspective. Both would prefer such terms of trade to trading at their MWTP, but the transaction would be unjust nevertheless: the consumer paying less than 15d takes too little of an evil (the price paid), and the producer receiving more than 10d takes too much of a good (the price received). Therefore, since MWTP may differ between parties in an exchange, one cannot demand equality of price and MWTP in every transaction.

The difficulty resolves itself when we expand our scope beyond the two parties to the general market for shoes. If the market price is 10d and there are more than one producer and consumer, then at any price other than 10d one of the parties would be unwilling to participate. At higher prices the consumer could find a different producer at 10d, and at lower prices the cobbler could sell at 10d to a different customer. Under equilibrium analysis, even though price is equal to MWTP at the quantity actually consumed, what sets the price of the shoe is not the MWTP but the exchange value, the outcome of the market equilibrium. Even though the consumer has a MWTP of 15d, the shoes have an exchange value of only 10d, and only if we reference the exchange value (rather than the MWTP) can we find a consistent price across all transactions.

Moreover, price consistency is important. Consider, ignoring the other difficulties, an economy in which each transaction is at the consumer's MWTP for that specific good. Then there would be some, with a great marginal demand before their appetite is sated, who would



pay a great price, and producers would compete for their business. And there would be some with little demand, who would not enter the market at the market price described, who would pay but a pittance. But the most natural way to compete for the high-demand customers would be to lower prices, and unless compelled the sellers would refuse to sell to the low-paying customers. If this process is not somehow checked, the market will arrive at the equilibrium previously described. Thus, enforcement of any system of unequal prices according to some attribute of consumers would require compelling sellers to neither refuse to do business with those commanding low prices or to reduce prices to attract those paying much, making it at best an unattractive means of achieving justice.

The second case where enforcing uniform prices may seem unfair is for those who have a MWTP under the market price, as they are the only people for whom their MWTP at their equilibrium quantity does not match the market price. The criterion of price equality seems to imply that it is just for them to take a loss, purchasing at the market price despite not thinking the good worth that price. However, such transactions will never actually take place—Aristotle deals here only with voluntarily transactions, and someone will not voluntarily pay more than his MWTP by definition. The true question of justice is not whether their price should not match their MWTP, but whether they should have the opportunity to purchase at a price below market. However, their gain in such a circumstance would be matched by the loss to the producer, who could sell the same goods at the market price to another. Moreover, the distribution under the market price is superior to the distribution where some buy below market price. Indeed, if someone with a low MWTP were to buy at that price, he would want to immediately turn the good over to someone willing to pay the market price. Therefore, the question is whether that arbitrage profit (the profit not from

producing a good, but delivering it to someone willing to pay a high price) should accrue to the producer or someone whose only virtue was to have little demand for the good, and there I think the producer the clear choice. The effect of allowing those with low MWTP to purchase below the market price is simply a wealth transfer to them from producers; while that class of low MWTP people is likely to overlap with the poor, I see no reason not to prefer direct redistribution of money.

The only situation in which this argument concerns me is for necessities, where it is unreasonable to expect the consumer to simply stay out of the market. However, this will not be an issue so long as the consumer can afford all he needs (noting, in accordance with marginal analysis, that a good can be a necessity in small quantities and a luxury at higher quantities; water to drink is a necessity, water to irrigate a lawn a luxury). Therefore, this is really a question of distributive justice; I argue below (section 5) that such concerns should not dictate terms of private exchange.

### **4.3 Wealth Effects**

A more general objection to Aristotle's reliance on market prices to value goods is the advantage it gives the wealthy. Using MWTP to measure demand means that, holding intensity of desire equal, a rich man may demand a good more strongly than a poor man simply because he has more money to spend. Few people can afford a private jet, yet it does not seem obvious that those who do purchase them enjoy them more than all who lack the money to do likewise. Possession of wealth thus magnifies one's desires; if two men desire a good with equal intensity, the richer can spend more to satisfy that want (and gives up

less, relative to his means, at any price) than the poorer, and thus if one follows Aristotle in defining demand according to price paid the richer man has stronger demand even where desire is equal. Moreover, this means that Aristotle's criterion for corrective justice does not guarantee allocative efficiency (some of the goods consumed by the rich would be more enjoyed by the poor).

On the other hand, I doubt that Aristotle would reconsider his criterion if confronted with this observation; he is certainly no egalitarian, and accepts disparities in wealth that correspond to disparities in merit. This does not, however, defend his criterion to those less comfortable with these disparities, and thus reject his standards for distributive justice. I contend, though, that the argument from wealth effects is only an argument against Aristotle's conception of distributive justice; if we keep in mind his separation of distributive and commutative justice, the remedy for wealth effects should be entirely in adjustments to the standard for distribution.

A disparity in wealth is merely a disparity in ability to command consumption; the wealth of someone with much money who is unable to use it to command consumption is illusory. Moreover, unless wealth is distributed in exact proportion to general intensity of desires (so that the ability to satisfy desires correlates with the strength of those desires), any inequality in wealth entails distortions due to that wealth (as, relative to the poor, the wealthy consume more without having correspondingly more intense desires). Therefore, wealth effects are a product of inequality, not a flawed structure of exchange; the only recourse is to eliminate the underlying inequalities, which is a matter of distribution.

One example of the difference between treating wealth effects as a distributive or price issue are the rent controls many American cities have had at some point over the past century.

The ostensible justification of rent control is primarily one of wealth effects: if rents are left free, competition will bid them out of reach of the poor; rent controls promise to keep housing affordable for all. In practice, however, the programs have generally been failures; being able to afford a good under price control does not mean that it is available at the mandated price, and rent control has uniformly resulted in declines in new construction (in places as great as a 97% decline).<sup>1</sup> This decline in supply corresponds with economic theory, since reducing prices reduces profitability and thus the incentive to devote land to rental units above other possible uses. Furthermore, this shortage of supply (in that rent control discourages construction while increasing quantity demanded) reduces the incentive for landlords to adequately maintain their property.<sup>2</sup> In general, rent control does redistribute wealth from landlords to tenants, some of whom will be the original targets, those who could not afford housing. However, it does so in a particularly inefficient fashion and is rife with unintended side effects, not least a reduction in supply that magnifies the inaccessibility of housing that the controls sought to address in the first place. Treating wealth effects in purchasing power as a price distortion makes some intuitive sense, but in practice tends to be counterproductive.

While economists generally recognize the concern that rent control purports to address, they propose a different solution: subsidize those who could not otherwise afford housing to pay for it at the market price. Where rent controls are an answer to wealth effects within commutative justice, such subsidies are an answer at the distributive level, and in practice are more efficient. Where rent controls decrease prices and reduce supply, rent subsidies

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<sup>1</sup>Richard W. Ault, "The Presumed Advantages and Real Disadvantages of Rent Control", *Rent Control: Myths and Realities*, ed. Walter Block and Edgar Olsen (Vancouver: Fraser Institute 1981) 67.

<sup>2</sup>Ault 68.

increase demand (here, the aggregate quantity demanded at a given price), price, and thus availability, while also allowing those formerly priced out to participate in the market. Thus, despite wealth effects appearing to be a distortion in exchange, it is more helpful to treat them as a problem with distribution.

In summary, wealth effects are just that, an effect of wealth, not price, and their elimination requires eliminating the disparities in wealth at their root. This distribution can, to some degree, be accomplished by manipulating prices, either varying prices by consumer so that those with more money pay higher prices or restricting prices to prevent the wealthy from bidding prices out of the reach of the poor. The former is equal in effect to a direct redistribution of money, and difficult to enforce; the latter causes supply shortages of the goods under price control that make them less, not more, accessible. While these may be concerns, the problem is with the initial disparity in monetary wealth, not with the price system.

## **5 Aristotle and modern concepts of justice**

Most intriguing to me about Aristotle's system of justice is his separation between distributive and commutative justice, considering merit holistically for distribution and narrowly for commutative justice. This separates him from most major recent theories of social justice: libertarians such as Nozick focus on commutative justice, leaving the initial distribution largely unquestioned, while some deal with final inequalities and Rawls deals not with particular results, but the rules regulating social and economic inequalities.

One thing further stands out about Aristotle's account of distributive justice relative to

most modern systems. Rawls judges entire economic and political institutions holistically: in his sense, justice attaches not to actions, but to institutions, with institutional inequalities tolerated only when every class of people benefits from the existence of the inequality and the position of benefit is open to all (disallowing exploitation and privilege).<sup>1</sup> By contrast, Aristotle focuses on justice not of institutions but of particular actions, considering even distributive justice through a ratio of two people and their receipts, with the societal structure of distribution is derived from that specification of the outcome for individuals. Together with the specific standard for justice in private transactions (while Rawls allows any system that satisfies his general standards for justice), Aristotle's system of justice seems decidedly individualistic compared to its modern counterpart.

Although I do not stand by Aristotle's particular standards for distributive justice, I believe that the remaining structure of his system, with distribution of public goods in proportion to some standard establishing base allocations and then the criterion of equal market value governing movement from those positions, is flexible and compelling. With a suitable standard, the distribution stage can emulate the distributive implications of a wide variety of systems of justice. For the strict egalitarian, initial wealth can be allocated equally; for the Marxist, on the basis of labour hours, for the libertarian, on the basis of market value of labour plus prior holdings, for the Rawlsian on whatever basis accords with his principles of justice. If one accepts market prices as a standard of value, subsequent transactions in accordance with Aristotle's criterion will leave this initial distribution unchanged.

The difference between the original systems and their reinterpretation into Aristotle's

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<sup>1</sup>John Rawls, "A Theory of Justice", *The Philosophy of Law*, ed. Frederick Schauer and Walter Sinnott-Armstrong (Harcourt Brace and Company, 1996) 521.

framework is the standard for equality in transactions. In particular, Rawls believes that there is not a specific criterion for just exchange beyond what is implied by the principles of the justice of institutions.<sup>1</sup> Therefore, even if an arbitrary distribution can be achieved within Aristotle's framework by choice of the standard of distribution, it remains more restrictive than Rawls allows in principle. However, Rawls assumes a free market system as a base,<sup>2</sup> and this means accepting exchange by market price in most circumstances. As I argue above, deviations from the standard are difficult to enforce (4.2), and use of price manipulation to address distribution is likely to do more harm than good (4.3).

Similarly, Stuart White's concept of justice as fair reciprocity fits well into Aristotle's framework. He distinguishes his fair reciprocity from strict reciprocity, with the latter being a strict proportion between an individual's contribution to the community and the value of the goods he may claim in return<sup>3</sup> and the former a commitment to substantial economic reciprocity (transactions should be to mutual advantage) combined with a correction for brute luck disadvantages and market vulnerability.<sup>4</sup> Again, the difficulties and perils of manipulating the price system to accomplish redistribution mean that strict reciprocity should reign in individual transactions, with the correction for disadvantages necessary for fairness coming from distribution. White himself, while not using Aristotle's terminology, comes to the same conclusion, advocating the use of income redistribution to achieve his goal of fairness.<sup>5</sup>

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<sup>1</sup>Rawls 521.

<sup>2</sup>Rawls 523.

<sup>3</sup>Stuart White, *The Civic Minimum* (Oxford: Oxford University Press, 2003) 51.

<sup>4</sup>White 77.

<sup>5</sup>White 79.

I thus think that Aristotle's criterion for just exchange has a place even within more modern conceptions of justice, if not because the standard is directly implied by the nature of justice, as Aristotle held, because distributive and commutative justice can be separated and adhering to Aristotle's criterion for the latter improves outcomes without constraining distribution.



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