

Aristotle's reciprocal justice in a modern social science context

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Abstract

Aristotle's economics of exchange: (a) Ideally, reciprocal justice in bilateral bargaining to minimize expenditure given utility levels results in Pareto-efficient, envy-free, equitable outcomes. (b) Practically, bargaining under the threat or actual recontracting may act as a surrogate of reciprocal justice, leading to an N-person (N-dimensional) contract topology. (c) But, recontracting is subject to practical limitations too, in which case near-reciprocal justice/general equilibrium outcomes may be fostered if, as a surrogate of recontracting, modesty in interaction is exhibited in an evolutionarily-stable-strategy fashion. (d) That is, incomplete recontracting amounts to asymmetric agent-type information, which in turn lays the ground for injustices; the same lack of information prevents rectificatory justice from being efficient and hence, modesty can be efficient only if it operates as a social norm and hence, only in a modest polity, which can be no other than democracy. The modern-day terminology used in connection with Aristotle sounds bizarre, but by this is meant that his thinking and answers on issues preoccupying social science for centuries, do not differ much from modern-day approaches to the same issues.

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1. Introduction

Book V of Aristotle's (384-322 BC) *Nicomachean Ethics* has elicited the attention of economists, because it contains Aristotle's economics of exchange. It is the economics implied by the concept of *reciprocal justice*, two-way justice or two-way equality in a mutual fashion so to speak, which type of justice is possible to exercise only in voluntary two-person exchange in the private sector. We shall see that it is specifically the concept which has come to be known, from the 1670s and on, as the Golden Rule or Law, or Ethic of Reciprocity. In its positive form, this rule urges to "*Treat others how you wish to be treated*", while in its negative form, "*One should not treat others in ways that one would not like to be treated*", (Flew 1979, p.134). This connection of exchange with this type of justice is the reason why according to historians of thought, jurists and theologians were the first to become interested in this subject matter, (see e.g. Gordon, 1975).

From the debate *permutatio vs. emptio-venditio* (barter vs. monetized exchange) and the concept of *iustum pretium* (just price) of the Justinian account of the Roman-Byzantine law, *Corpus Juris Civilis* (534 AD), to the medieval extension of the doctrine *laesus enormis* (excessive inheritance) embodied in this law, by Carloman's notion of *negocium* (business transaction) in his *Capitula* (884 AD) and by the revivalists of this law in the Bologna School of Law founded by Irnerius in 1084 AD. And, subsequently, from S. Thomae Aquinatis' *Summa Theologica* (1265/7-1273 AD) and the Scholastics (1300-1600 AD) to Venerable Leonard Lessius' *De Justitia et Jure* (1605 AD) and the dawn of present-day economics by Adam Smith.

Consequently, an understanding of the Aristotelian economics of exchange should also be able to provide an understanding of the post-Aristotelian approaches to exchange and price formation. We see, for example, that the following mentality of the Schoolmen, described by Gordon (1975, p. 260), mirrors Aristotle: “*Most Schoolmen assumed that even in the absence of monopoly, markets were rarely perfect. Some lack of knowledge must almost be present and could be tolerated by the moralist.*” And, Jaffe (1974) maintains—as we do too, herein, but absolved from the “obscurities in Book V” (Jaffe 1974, p. 385), which in my opinion plague Jaffe, too—that even Edgeworth's contract curve is Aristotelian in origin. Some, of course, like Schumpeter (1954) and Rothbard (1995) see no economics in the Aristotelian economics of exchange, Ludwig von Mises (1963 [1949]) claims that these economics are simply fallacious while others like Theocarakis (2006, p. 9) think that “...*the attempt to base subsequent economic analysis on his canon is utterly untenable.*” ...Everyone is entitled to his or her opinion...

Theocarakis' (2006) work does offer a recent critical history of Aristotle's economics of exchange. One realizes going through this history that the source of the confusion about “Aristotelian exchange” is the confusion about the definition of the term “reciprocal figures” in Euclid's *Elements*, (see e.g. Simpson, 1804), which opened the doors to all sorts of philosophical speculative and in the end futile thinking. I, too, am inclined to “read Aristotle” with a philosophical eye, though, in my view, what he wanted to say is quite clear, because Euclid's notion of reciprocity should be in line with the universal appeal of the Golden Rule as well, and hence, anything but obscure. Translations of Book V give a diagrammatic exposition of reciprocity too, attributing it to Aristotle; but if there was indeed a figure in the original text, it must had been a Euclidean geometric exposition, which “who knows” how it ended up to Nicolas Oresme's poor and inaccurate as we shall see diagram. Now, let us take things one at time.

A discussion of the Aristotelian price theory is prompted usually by the views he held about the other forms of economic justice, which are the following two: First, exchange in the absence of reciprocal justice would be involuntary and hence, subject to *rectificatory justice*, which: “...*has nothing to do with punishment proper but is only that of rectifying a wrong that has been done, by awarding damages; i.e.*”

rectificatory justice is that of the civil, not of the criminal courts...[I]t brings A to the position A+C, and B to the position B-C. The judge's task is to find the arithmetical mean between these, and this he does by transferring C from A to B." (Ross 1923, p. 300)

And, second, exchange in the realm of public economy should be governed by *distributive justice*, "*which distributes common possessions...in accordance with the kind of proportion mentioned above*", (Ethics, 1131b:28-30), that is, in accordance with the geometric progression, "*(for in the case also in which the distribution is made from the common funds of a partnership it will be according to the same ratio which the funds put into the business by the partners bear to one another)*", (Ethics, 1131b:30-33)

Now, the question that usually prompts a discussion of reciprocal justice is that if rectificatory and distributive justice are marked by the arithmetic and the geometric proportion, respectively, shouldn't there be a proportion underlying reciprocal justice, too? Indeed, voluntary two-person exchange is governed by proportionate reciprocity. According to the second definition in the sixth book of Euclid's *Elements*: "*Two magnitudes are said to be reciprocally proportional to two others when one of the first is to one of the other magnitudes as the remaining one of the last two is to the remaining one of the first.*" That is, given A/B, terms A and D will be reciprocally proportional to terms B and C when they satisfy both of the proportions A/B:C/D and A/B:D/C. For example, in 3/1:2/6, 3 is to 6 as 1 is to 2, or $3/6=1/2$. And, in 3/1:6/2, 3 is to 6 as 1 is to 2, or again, $3/6=1/2$. The reciprocity lies in that C/D may become D/C and nothing else change: $A/D=B/C$ in either case, which equality is what makes reciprocity to be geometrically constructible.

Returning back to Aristotle's exchange economics, we shall see that in this example, $C=p_x$, $D=p_y$, where p is price and $x=A$ and $y=B$ are quantities of the goods x and y by traders A and B. For now, it suffices to point out the connection of relationship $A/D=B/C$ with Golden Rule: It is a relationship, summarizing according to Book V the characteristics of traders A and B. The understanding of Aristotelian economics of exchange rests upon the understanding of these characteristics. Do they reflect a utility approach to exchange or a producer-cost theory of value or both? And, it is only the characteristics of traders A and B and their bargaining capacity that matter in determining the ratio C/D or it is also the market, what others do, that matters as well? These are the questions which have been puzzling implicitly or explicitly analysts of Aristotle's views on exchange all along.

The current thesis is that: "*Aristotle's limit on determination of the terms of trade appear to be broad social determinants, bound up with inequalities of social status or acquired skills of the persons responsible for production and exchange...Aristotle is endeavouring to relate establishment of just terms of trade to that general framework of social realities which condition and mould the interactions of economic variables.*", (Gordon 1975, p. 69) I attribute this thesis to the mistaken

perception of the elements entering distributive justice as elements influencing reciprocal justice, too. This mistaken approach blurs the thematic structure and subsequently, the understanding of Book V *as it stands* regardless the possible “*corruptions of the text perpetrated by countless generations of copyists*”. (Jaffe 1974, p. 385)

The thesis advanced herein has a follows: Aristotle develops first a bilateral trade model that arrives at a two-person equilibrium on the basis of the need of and output produced by each trader. Bargaining based on reciprocal justice will result in a Pareto-efficient, envy-free, equitable outcome. Next, as very well Winthrop (1978) observes, Aristotle points out that all this is theory based on the assumption of choosing to do justice rather than injustice when for some reason one of the bargaining parties can do have such a choice. In the absence of reciprocal justice, agents bargaining in a recontracting fashion will end up in a general equilibrium in which an excess demand by a particular trader is also in aggregate excess demand. But, the real world is one in which neither recontracting can match the outcome of reciprocal justice.

It takes modesty on the part of traders to minimize injustice, which modesty in turn may be exhibited only in the context of a democracy. A discussion of the choice between exchange justice (and any other kind of justice) and injustice should not be abstract, but brought down to the practice of people in a democracy, to see what can make these people come closer to the theoretical standard. The answer is “modesty” (in exchange and in any in general interaction) in an evolutionary-stable-strategy fashion, fostering not only market exchange justice but also the continuity of all social norms upon which a virtuous democratic society is founded. Modesty consists of unconditional trustworthiness and informal only sanctions in case of injustice. Democracy-modesty as the basis of free choice is what differentiates Aristotle from the other evolutionary models of cooperation vs. self-interest like those of Falk et al. (2005), Fehr and Gächter (2000), Guttman (2003), and Ostrom (2000).

2. On Proportionate Reciprocity

Proportionate reciprocity is advanced in Chapter 5 of Book V. It is advanced within the context of barter exchange between 1133a:7 and 1133b:12, but not before an introduction to reciprocity *per se* by the same chapter. It is neither the “an-eye-for-an-eye” notion of reciprocity occupied by game theory and elsewhere nowadays (see e.g. Gouldner, 1960; MacCormack, 1976; or Molm, 2010) nor any of the notions advanced by the standard modern works on Book V, from Grant (1885) to Ross (1923) and Stewart (1973). Aristotle’s introduction to reciprocity really says that although the deals with the public or the courts may not engender the reciprocity one would expect from a deal, such reciprocity does exist in voluntary exchange. It consists of doing a trader business putting his feet into the shoes of the trader with whom he is trading in so far as the “fairness” of the terms of trade is concerned. The

main discussion of proportionate reciprocity is followed by a discussion of monetary exchange, too, between 1133b:12 and 1133b:33 in the same chapter.

In my opinion, the key passages from the main discussion and their interpretation have as follows: “*If then there is proportionate equality of goods, and then reciprocal action takes place, the result we mention will be effected.*” (Ethics, 1133a:12-14) The “result” is, of course, proportionate reciprocity. If, for example, the equality of three kilograms of wheat with one pair of shoes is agreed upon by a wheat farmer and a shoemaker, and then two such pairs are exchanged for six kilograms of wheat, proportionate reciprocity will have been effected.

But, what determines these terms of trade? Two things; intensity of need and production technology: “*...all things that are exchanged must be somehow comparable...All goods must...be measured by some one thing...Now this unit is χρεία (need), ...; but money has become by convention a representative of need.*” (Ethics, 1133a:22-35) And, “*There will be then reciprocity when the terms have been equated so that as farmer is to shoemaker, the shoemaker’s ἐργον (productive effort) is to that of the farmer’s productive effort for which it exchanges.*” (Ethics, 1133a:38-40)

That is, the amount of money the shoemaker/farmer offers for the farmer’s/shoemaker’s product shows “how badly” one needs the product of the other. And, when the ratio of the amounts of money offered becomes proportional to the ratio of the volume of outputs offered for exchange in the fashion:

$$\frac{\text{output of shoemaker needed by farmer}}{\text{output of farmer needed by shoemaker}} : \frac{\text{offer for shoes}}{\text{offer for wheat}} \text{ and}$$

$$\frac{\text{output of shoemaker needed by farmer}}{\text{output of farmer needed by shoemaker}} : \frac{\text{offer for wheat}}{\text{offer for shoes}},$$

that is, when the farmer/shoemaker thinks that what he would be willing to pay for wheat/shoes if he was a shoemaker/farmer is what actually the shoemakers/farmer offers to him, proportionate reciprocity will have been effected. Note parenthetically, that there is as much labor theory of value *and* utility theory in Aristotle as needed to put forward these expressions; we shall see that not even economics *per se* is his primary concern, let alone the development of a theory of value...

Anyway, the proportions mentioned in the introductory section of this tract reflect this wheat-shoes example, with $A/B \equiv \text{wheat/shoes}$ and $C/D \equiv \text{offer for wheat/offer for shoes}$, and proportionate reciprocity is given alternatively by the relationship: $A/D = B/C \Rightarrow C/D = B/A$, i.e. by the equalities,

$$\frac{\text{output of farmer}}{\text{offer for shoes}} = \frac{\text{output of shoemaker}}{\text{offer for wheat}} \Rightarrow$$

$$\frac{\text{offer for wheat}}{\text{offer for shoes}} = \frac{\text{quantity of shoes}}{\text{quantity of wheat}},$$

or numerically, by $3/1=6/2$, which, however, equality cannot be achieved before the satisfaction of the following proviso, too: “...we must not bring them into a figure of proportion when they have already exchanged (otherwise one *ἀκρον* (end of the bargaining) will have both *υπεροχάς* (advantages)), but when they still have their own goods.” (Ethics, 1133a:4D-1133b:3)

This passage does two things: First, the part “when they still have their own goods” introduces as the basis of bargaining the budget constraints:

$$y_A + y_B = \bar{y} \Rightarrow [(y_A - \bar{y}) + y_B] = 0 \text{ or } dy_A + dy_B = 0 \text{ or } |dy_A| = |dy_B| = y_B,$$

and

$$x_A + x_B = \bar{x} \Rightarrow [(x_B - \bar{x}) + x_A] = 0 \text{ or } dx_B + dx_A = 0 \text{ or } |dx_B| = |dx_A| = x_A,$$

where A and B are two persons specializing in the production of good y and x and having produced \bar{y} and \bar{x} , respectively, $(y_A - \bar{y}) = dy_A < 0$ is the volume of y to be exchanged for x to get $x_A = dx_A > 0$, and $(x_B - \bar{x}) = dx_B < 0$ is the volume of x to be traded to get $y_B = dy_B > 0$.

Second, the two “advantages” in the parentheses above are one from being a seller and selling high, and one from being a buyer and buying low. Consequently, the whole phrase in the parentheses states that the double unilateral advantage that it mentions, is not desirable as a solution to bargaining. It follows that the second point of the passage is that the outcome of bargaining will be in accordance with proportionate reciprocity if it eliminates excess demands and supplies.

Indeed, adding prices p_x and p_y into the discussion, reciprocity becomes equivalent to recognition that:

$$p_y(y_A - \bar{y} + y_B) + p_x(x_B - \bar{x} + x_A) = 0,$$

and proportionate reciprocity will have been effected when:

$$p_y(y_A - \bar{y} + y_B) = 0 \quad \text{and} \quad p_x(x_B - \bar{x} + x_A) = 0,$$

or the same, by the relationship:

$$\frac{p_x}{p_y} = \frac{y_B}{x_A},$$

since at these equilibrium prices, either $p_y(y_A - \bar{y}) + p_x(x_A - 0) = 0$ or $p_y(y_B - 0) + p_x(x_B - \bar{x}) = 0$ imply that $p_y dy = p_x dx$ or the same, that $p_y y_B = p_x x_A$, which yields the above relationship. Are prices p_x and p_y “individualized” prices, the outcome of bilateral bargaining, differing across bargaining couples in the market of a product?

If there is no recontracting, the answer will be in the affirmative: The quantities to be exchanged are as fixed as the ratio A/B in the above proportions,

which in turn implies that two traders bargain to settle that ratio $C/D \equiv p_x/p_y$ which would minimize both the individual and joint expenditure needed to ascertain a certain utility level on the part of each trader. By Shephard's Lemma, the resulting demand curves will be the Hicksian rather than the Marshallian ones. Hence, at first sight it appears that reciprocal justice wants the bargaining parties behaving in their role as sellers, as monopolists exercising first degree price discrimination, appropriating each the consumer-cum-producer surplus of the other under prices equaling marginal production costs. And, of course, the similarity of production conditions is one reason why p_x and p_y should not be differing across bargaining parties.

But, this is not the whole "story"; it is a warning that without market search *via* the threat of or actual recontracting, one of the two parties may be victimized by the exchange, because the consumer-cum-producer surplus lost will most likely exceed the surplus gained by one of the two parties: "...one who gives what is his own, as Homer says Glaucus gave Diomedes 'Armour of gold for brazen, the price of a hundred beaves for nine', is not unjustly treated; for though to give is in his power, to be unjustly treated is not, but there must be someone to treat him unjustly. It is plain, then, that being unjustly treated is not voluntary.", (Ethics, 1136b:10-15).

Glaucus was clearly victimized by Diomedes despite the presence of voluntariness, because: "...if a man assigns more to another than to himself, knowingly and voluntarily, he treats himself unjustly; which is what modest people seem to do, since the virtuous man tends to take less than his share. Or does this statement too needs qualification? For (a) he perhaps gets more than his share of some other good, e.g. of honour or of intrinsic nobility..." (Ethics, 1136b:18-23). Glaucus showed to Diomedes nobility. Yet, strictly in economic terms, exchange resulting in wealth redistribution *a la* Glaucus-Diomedes is not reciprocal justice; only the "voluntary" part of it is.

The notion of reciprocal justice becomes complete by noting that the other, the main reason, why the price of any product should be unique in a monetized economy, is that: "...all goods must have a price set on them", (Ethics, 1133b:17). It follows that the price tag for a good should be reflecting the lower production cost of it as a matter of seller competition. Consequently, what Aristotle wants to say is that agents, being aware of the wealth-loss eventuality if they do not bargain within the broader context of recontracting to obtain all the price information needed before the act of exchange, they will simply bargain in a recontracting fashion; and by doing so the duality between Hicksian and Marshallian demand may be attained. That is, reciprocal justice does not come about based solely upon the good will of the bargaining parties, but by trying actively each party to enforce such a will by the other party through recontracting: Aristotle couldn't possibly ignore ancient Greek drama's maxim that: *God helps those who help themselves...*

But, again, if there are price tags, what is the use of bargaining? Which is the precise content of recontracting? Consider toward this end a general decentralized equilibrium of $N-2$ agents, having set the $N-2$ market-clearing price tags of two goods. The remaining 2 agents continue bargaining, leaving open the eventuality of ending up in terms of trade which need not be identical with those in the $N-2$ market. Consequently, if the prices on price tags are to be unique, all bargaining is pre-equilibrium bargaining, and can have only the meaning of recontracting, because, in the absence of an auctioneer, only recontracting can result in single market prices.

Aristotle is not explicit in that because his main concern was not economics but justice in the city, (and/or because of corruptions in the text...). He is preoccupied with what will happen to the city if price tags do not reflect reciprocal justice: “*For it is by proportionate requital that the city holds together*”, (Ethics, 1132b:36-39). And, he advances the price-tag argument under a mentality no different than “...*when channel members are concerned about fairness, the manufacturer can use a simple wholesale price above her marginal cost to coordinate this channel both in terms of achieving the maximum channel profit and in terms of attaining the maximum channel utility. Thus, channel coordination may not require an elaborate pricing contract. A constant wholesale price will do.*” (Cui et al. 2007, p. 1303). Aristotle would add that sellers care for fairness in the first place, because of the fear of recontracting; price tags try to preempt it.

In other words, reciprocal justice is Aristotle’s version of recontracting, and at a general equilibrium level, the result is an N -person Edgeworth/Walrasian contract topology. Edgeworth and Walras isolate from Book V its economics, and present it in a formal way. For Walras (1969 [1874], §99): “*The exchange of two commodities for each other in a perfectly competitive market is an operation by which all holders of either one, or of both of the two commodities can obtain the greatest possible satisfaction of their wants consistent with the condition that the two commodities are bought and sold at one and the same rate of exchange throughout the market.*” And, also: “*According to Walras, it is not by violating the principle of ‘justice in exchange’ that the injustices of the existing distribution of property are corrected, but by applying another set of principles, those of ‘distributive justice’.*” (Jaffe 1977, p. 373) That is, just exchange leaves wealth (property) distribution intact, which if it is to be altered, it should be altered by public policy: All in line with Book V except for the public-policy part which breaks the ground for the second fundamental theorem of welfare economics. For Aristotle, income redistribution might be thought of as being replaced by honor-nobility redistribution.

As very nicely Van Johnson (1939) remarks, reciprocal justice is equating agents in the following fashion by design: “*For it is not two doctors that associate for exchange, but a doctor and a farmer, or in general people who are different and unequal; but these must be equated.*” (Ethics, 1133a:20-22). Trade should not be altering the relative socioeconomic position of the trading parties, because if it did, if one became richer at the expense of the other, there would not be reciprocal justice:

“...the justice in transactions between man and man is a sort of equality indeed, and the injustice a sort of inequality...” (Ethics, 1131b:33-34). Exchange induced equitability issues are thus not raised. Enviousness issues are not raised too, and moreover, Pareto efficiency will be insured when reciprocal justice in exchange amounts to putting himself a trader in the other trader’s place *and* making—now we shall add—the other trader do the same. This is the definition of reciprocal justice as an ideal.

But, by the second fundamental theorem of welfare economics, not even Pareto efficiency alone can be achieved through the free market system before lump-sum transfers and subsidies are effected among the agents. Aristotle does recognize this possibility, but urges “modesty” and thereby, honor and nobility in exchange (as in everything else) instead of government intervention. Aristotle dismisses income redistribution even from the viewpoint of the second welfare theorem, because who would consent to an income loss for the sake of Pareto efficiency? Instead, one should run to the judge for rectificatory justice. This plus the idealistic character of reciprocal justice are the reasons making Aristotle dismiss market (exchange) as a principal factor shaping citizen behavior and practice (see e.g. Winthrop, 1978) although he does acknowledge the inevitability of the institution of the market. He thus addresses the nobility each man has inside him to make him act in a modest way as a way of attaining not only near-Pareto efficiency but near-genuine democracy as well: Once man chose to exchange and become *homo economicus*, this can be done more efficiently as a *homo politicus*, much more so when exchange without society is impossible. Then and only then one *might* consent to a Pareto efficiency seeking income redistribution...

This is in sum the interpretation of the Aristotelian concept of proportionate reciprocity advanced herein. It is the core concept behind a microfoundation of city socioeconomics, and of course, a discussion of “modesty” and to what “honor and nobility” amount to in practice, is necessary to complete his overall approach to this subject. Such a discussion follows immediately in the next section, concluding this one with a remark on the role of money. Although the passages from Book V we used did mention money, the phrases “offer for wheat” and “offer for shoes” did not, connoting offers either in kilograms of wheat and pairs shoes, respectively, or in money: “...for it makes no difference whether it is five beds that exchange for a house, or the money value of five beds”, (Ethics, 1133b:32-33)

3. On Modesty

Book V is divided into two parts. One, until chapter 5, elaborates upon the principles of justice, and the other, after chapter 5, elaborates upon the issues that have to be taken into account for the practical conformity to these principles in a democracy. Chapter 6 starts by noting that: “...we must not forget that what we are looking for is not only what is just without qualification but also political justice. This is found among men who share their life with a view to self-sufficiency, men who are

free and equal...” (Ethics, 1134a:29-32). Political justice consists of natural and legal justice (Ethics, 1134b:23-30). Natural justice is that which is universally true like the fire that: “...*burns both here and in Persia...*” (Ethics, 1134b:33). Legal justice depends on societal form, referring to: “...*things which are just not by nature but by human enactment [and] are not everywhere the same...*” (Ethics, 1135a:4-7). And, according to *Politics*, the best by nature societal form is democracy, because it is: “...*the less evil form of government since it does not deviate much from the kind of governance (exercised) by citizens themselves*” (Politics, 1160b:22-24)

The keyword for the understanding of the context in which the notions of exchange justice and modesty are advanced and hence, for the thorough understanding of these notions *per se*, is the phrase “best by nature”; especially so given that this phrase does not refer to natural justice. Nature, refers to the voluntary rather than coercive foundation of society, including market interaction, which is: “...*the most elementary means to self-sufficiency, for the sake of which it is believed that people formed society*”, (Politics, 1321b:17-19). Or, in modern terms, to those social norms and institutions that have prevailed in an evolutionarily-stable-strategy fashion, the strategy choice being the one between justice and injustice, which choice can be made freely and in favor thereby of justice, only by: “...*people who have an equal share in ruling and being ruled*”, (Ethics, 1134b:18-19). Such people can simply behave with modesty, being just and tolerating injustice without fearing that this attitude will be taken as a weakness, because they do have the option to exercise the eye-for-an-eye justice of Rhadamanthus: “*Should a man suffer what he did, the right justice would be done*”, (Ethics, 1132b:31)

Consequently, what should be the focus of a study towards societal betterment is the origin of the deviant strategy choice of doing the unjust in a democracy. What should be of concern is the choice of injustice broadly defined, and not confined to the economic being alone. This precisely concern is the subject matter of discussion after chapter 5 of Book V. The content of injustice has as follows: “*Now when (1) the injury takes place contrary to reasonable expectation, it is a misadventure. When (2) it is not contrary to reasonable expectation but does not imply vice, it is a mistake...When (3) he acts with knowledge but not after deliberation, it is an act of injustice...But when (4) a man acts from choice, he is an unjust man and a vicious man*” (Ethics, 1135b:19-29) In the first two instances, one: “...*is not unjustly treated...[and] at most only suffers harm*” (Ethics, 1136b:25-30). Tolerance under these circumstances is meaningful and even in the case of act of injustice.

But, one would not be immodest if one, aided by the police and courts, retaliated against a vicious man whom, however, one cannot know beforehand that he is such a man and avoid him. And, if the interaction with and injustice by such a man occur only once, which is logical to assume since...“*fool me twice, shame on me*”,...it will be uncertain if the injustice was done after deliberation or not. It is exactly this lack of interpersonal information which lays the ground for injustice as a strategy choice in a hit-and-run fashion. Two interrelated questions come up immediately:

Why doesn't injustice spread? And, why all injustice is not countered by Rhadamanthus-style retaliation? The answers are equally interrelated, because both stem from the behavioral-public-good character of democracy as follows.

First, note that pay-back-with-the-same-coin punishments should be decided by the civil (as opposed to penal) courts, not imposed by the victims themselves. And, it is precisely for this reason too, that retaliation is impossible, because which exactly is the "coin" if the plaintiff cannot tell viciousness from act of injustice and even further, from mistake or misadventure on the part of the suspect? In game-theoretic jargon, injustice is realized as a noisy signal about player type. In a democracy, this lack of information is particularly important, because modesty should be exercised by the judiciary as well, as crystallized into the Roman dictum: *summum jus summa injuria*. Indeed, court deliberations in a democracy have to take into account that: "...acting unjustly is the worse, for it involves vice and is blameworthy, ...while being unjustly treated does not involve vice and injustice in oneself. In itself, then, being unjustly treated is less bad..." (Ethics, 1138a:37-42)

So, asymmetric information and modesty on the part of the judiciary for the same reason modesty on the part of the citizen should be exhibited, mild only convictions if any may produce. No Rhadamanthus-style retaliation is possible. But, how, then, injustice does not spread? The answer according to Aristotle is by seeing democracy as a sociopolitical public good based on modesty as a social norm whose norm's would-be negative consequences are a cost in favor of this good. Modesty not only on the part of the citizenry and of the judiciary but also of the statesmen and city (*polis*) executives: "...we do not allow a man to rule, but rational principle, because a man behaves...in his own interests and becomes a tyrant" (Ethics, 1134a:42-1134b:1)

That is, democracy and modesty are put forward by Aristotle in the same spirit modern game theory puts the provision of public goods in terms of social norms, which norm is: "...1) a behavioral regularity; that is 2) based on a socially shared belief of how one ought to behave; which triggers 3) the enforcement of the prescribed behavior by informal social sanctions. Thus, a social norm can be thought of as a sort of behavioral public good, in which everybody should make a positive contribution—that is, follow the social norm..." (Fehr and Gächter 2000, p. 166) The norm is a public good itself, and as far as modesty—tolerance, we would say today—is concerned, it is the top in virtue social norm because it is the virtue consistent most with the informality of sanctions against its violation, since modesty should be shown to sanctions against injustice as well.

Spreading the word that "Mr. X deceived me" is believed to be enough to bring Mr. X back to order. This kind of cooperative behavior is advocated by Aristotle as a means of preserving the continuity of a democratic society. According to *Politics* (1320a:2-6), the continuity of a society depends more on the cooperative behavior making it possible than in the character of the society, which for a democracy means, more on modesty than in the democratic institutions. Consequently, modesty is a kind

of cooperative interaction, which is not found in game theory even though (a) the “typical cooperator” of game theory is looked upon from the viewpoint of maintaining the societal arrangement of the interaction too, and (b) Ostrom’s (2000), for example, “conditional cooperators” does value the public-goods nature of reciprocity per se, deriving benefit beyond the objective payoff when they reciprocate trust with trust, but suffering from intrinsic costs when they fail to do so.

Note that these considerations apply to any society and not necessarily only to the democratic one. This is also true for the conclusion that: “...if there is a noisy signal about a player’s type that is at least more accurate than random, trustworthy types will survive as a substantial proportion of the population. Noisy signals may result from seeing one another, face-to-face communication...” (Ostrom 2000, p.145) This statement presumes unconditional pre-exchange, pre-would-be-injustice, trust. That’s exactly what Aristotle presumes too, and arrives at the same conclusion; but he goes one step further and asks what is the socioeconomic and political arrangement that would prompt the emergence of such unconditional trust in the first place. And, his answer is: unconditional cooperation is a matter of free choice, and free choice is maximized only in a democracy. He also asks whether unconditional trust should continue to exist after acts of injustice, and suggests that it should making at the same time public “noisy-signal” information.

Indeed, as very well Lubell and Scholz (2001, p. 160) put it: “(1) On average, initial cooperators gain a cooperators’ advantage over initial defectors due to defectors’ inability to take advantage of reciprocal environments; (2) Past experience with reciprocity reduces exploitation even when reciprocity is currently absent, while past experience with nonreciprocity does not hamper cooperation when reciprocity is currently present; and (3) Institutions that punish noncooperation enhance cooperation by initial defectors, but reduce cooperation by initial cooperators.” This is why, in practice, as for example Kahneman’s et al. (1986, p. S285) remark: “Even profit-maximizing firms will have an incentive to act in a manner that is perceived as fair if the individuals with whom they deal are willing to resist unfair transactions and punish unfair firms at some cost to themselves... willingness to enforce fairness is common.”

And, in view of the qualification of the concept of reciprocity which is needed in the presence of modesty, the kind of modern-day notion of it that might be endorsed by Aristotle is perhaps Molm’s (1994, pp. 119-120) “reciprocal exchange”: “In reciprocal exchange, actors perform individual acts that benefit another, like giving help or advice, without negotiation and without knowing whether or when the other will reciprocate. My focus on reciprocal exchange came out of my early training in behavioral sociology (Burgess and Bushell 1969); many of the early behavioral experiments were conducted under minimal information conditions in which the reciprocal exchange of benefits was all that subjects experienced, so reciprocity was very salient.”

4. Epilogue

It would be instructive to conclude this paper by asking why the economic and non-economic elements are so much interwoven in Book V. This Book is the product of circumstances too, which need to be discussed for a thorough picture of it. Toward this end, note that: “*The agora in Greece does not originally represent the marketplace; first of all it is closely bound up with the development of the polis as the site of political gatherings. Only gradually does it achieve the additional use of a place of internal exchange.*” (Moller 2000, p. 71) Also, note that in *Politics* (1331a:19-1331b:18), Aristotle proposes the separation of the “free agora” of politicians from the “exchange agora”, which indicates the transformation of the political meeting place into a mixed political-cum-market place by the 4th century B.C.

This coupled with the fact that: “*Greece in general was much more highly monetized in the later fourth century, when Aristotle was writing.*” (Trevett 2001, p. 23) suggest that the socioeconomic and political environment of those times was one of all sorts of imperfectly competitive phenomena, being shaped *inter alia* by the give-and-take of politicians with people of the market, too; see e.g. Lewis, 1978). And, Aristotle could not possibly separate the two in a discussion of justice, placing the emphasis on the sociopolitical rather the economic element in a manner no different than modern-day quests for preventing democracy distortions by the economically powerful. His recipe was moderation from all sides, as his second fundamental theorem of welfare after he had worked out the first such theorem in terms of reciprocal-justice spirited recontracting.

Moderation even in the lifestyle, because he does know from the Anonymous of Iamblichus that people get actively involved in politics only when they do not prosper, and emphasizes that prosperity should be identified with autarky, with self-sufficiency: “...*we should not be motivated by greed, neither to think that the power needed to satisfy greed is a virtue...*” (Anonymous of Iamblichus, 1.6.1) As far as the fourth century is concerned, autarky extends beyond self-sufficiency in a subsistence economy much as modern-day autarky is what most households pursue through supermarket and shopping center visits. When riches are condemned by Aristotle, they are not *per se* but when they are used disorderly as a socioeconomic equilibrium destabilizing instrument, propagating the disequilibrium stemming out of the practical limitations of recontacting.

In sum: Bilateral bargaining under reciprocal justice can lead to Pareto efficient, envy-free equitable allocations. But, the presence of such justice in exchange is an ideal and therefore, in practice bilateral bargaining should be taking place in a recontracting fashion so that equilibrium-price tags may be posted in a market place. Yet, recontracting has its practical limitations as well, and therefore, only modesty in exchange can prove to be market stabilizing. And, modesty as a *homo economicus* can certainly be the case only when modesty is exhibited as a

broader virtue not only on the part of the isolated individual but also collectively by the polity, which can be the case only in a democracy.

Aristotle does know of the redistributive practices that a state may engage in. But, instead of invoking upon, for example, Samuelson-like lump-sum transfers from the young to the elderly within the context of the second welfare theorem to attain intergenerational efficiency in a decentralized economy, he prefers to address the *homo politicus* inside the *homo economicus*, (given that the primary motive for societal formations is the economic one). This and the misunderstanding of Euclid's reciprocal figures have been the reasons for the confusion about what Aristotle had to say regarding market economic exchange. On economic grounds, he is the ultimate *laissez-faire* advocator, but Ludwig von Mises (1963 [1949]), for instance, cannot proclaim him as such, and very rightly so, because simply the economic element is dominated eventually by Arnhart's (1994), for example, sociopolitical darwinism. And, Schumpeter (1954), for example, cannot see any economics in Book V, because he cannot appreciate the geometry of reciprocal figures, and indeed, there are no economics, only a philosophico-socio-political discussion, when this geometry is discarded.

Appendix: On Jaffe (1974) and On Diagrammatic Exposition

The difficulties in clarifying Euclid's concept of "reciprocal figures" in the past, and the first passage from Ethics quoted below, had induced many to discuss Aristotle's economics of exchange in connection with some quadrilateral. The last such discussion was made by Jaffe (1974) to stress the Aristotelian origin of Edgeworth's contract curve. It is only this viewpoint that Jaffe's and this work share, having analytically nothing else in common. Jaffe's purpose is to establish the Aristotelian origin of Edgeworth's contract curve, but it should have become clear by now that the present work reached the same conclusion only as a by-product of our discussion. And, this is the reason why the Aristotelian contract curve exhibits Walrasian characteristics as well... The recontracting is Edgeworth-minded but the contract curve is Walrasian...

The only other point to which Jaffe's and this work meet is that Aristotle does not use diagrams at all. He does not do so in the case of distributive justice and especially, in the case of rectificatory justice where he even names the line segments to be considered; $\alpha\alpha$, $\beta\beta$, $\gamma\gamma$, etc. But, to connect this work with the past tendencies of using diagrams to explain reciprocal justice, one thing is for sure, namely, that Nicolas Oresme's (c. 1326-1382 AD) Figure, Figure 1a – as, for instance, appears in Ross' translation of Ethics in 1894 or as reproduced by Jaffe in 1974 – describing supposedly reciprocal justice, fails to do so. At first sight, Oresme appears to be tracking closely the meaning of the following passage: "*Now proportionate return is secured by cross-conjunction. Let A be a builder, B a shoemaker, C a house, D a shoe. The builder, then, must get from the shoemaker the latter's ἐργον (output), and must himself give him in return his own.*" (Ethics, 1133a:7-12)

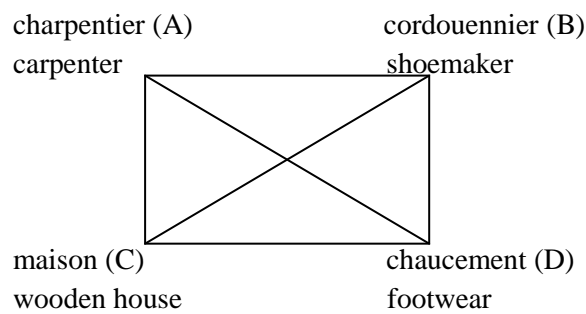


Figure 1a

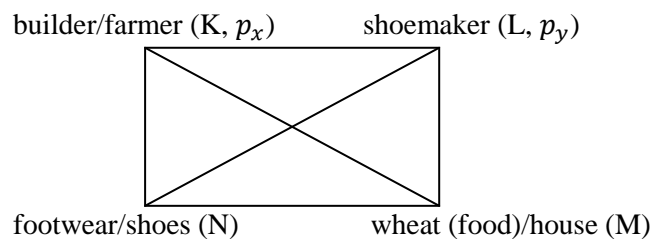


Figure 1b

But, Oresme fails in his diagram to follow the order of the letters A, B, C, and D. If one disregards this letter sequence, one might as well contemplate placing the letters in the order of an Edgeworth box. Anyway, the reason Oresme fails to follow the order A-B-C-D may be detected through the subsequent passage: “*Let A be a farmer, C food, B a shoemaker, D his ἐργον (output) **equated** to C. If it had not been possible for reciprocity to be thus effected, there would have been no association of the parties.*” (Ethics, 1133b:5-7) The verb “equated” has been written in bold by the author of this paper, because it is the key in comprehending that in a diagrammatic exposition of reciprocal justice, A and B must be price subscripts, since the price ratio is what equates. If one does so, as we shall immediately do here, the order A, B, C, D, is preserved; Oresme failed to appreciate the contribution of the “equated” to a diagrammatic exposition, which certainly would not have been the case with Aristotle himself IF he had used diagrams and if these diagrams were quadrilaterals based on the two passages above.

The letter sequence A-B-C-D is not the same neither in our earlier example, but only as a matter of definition: A is wheat, B is shoes, C is a farmer or rather the price of his product, and D is the price of shoes. To connect our example with Oresme’s diagram, let K be a farmer (or $p_K \equiv p_x \equiv p_A$), L a shoemaker (or $p_L \equiv p_y \equiv p_B$), M wheat, and N shoes. K corresponds to C, L to D, M to A, and N to B while under proportionate reciprocity: $M/L=N/K \Rightarrow K/L=N/M$. Oresme’s figure is given now by Figure 1b. According to Thales’s intercept theorem, our arithmetic

example would have produced Figure 2 in which the numbers 1 and 3 on half-line z are half of the numbers 2 and 6 on half-line w .

One obtains subsequently, the quadrilateral of Figure 3, which is geometrically constructible as follows:

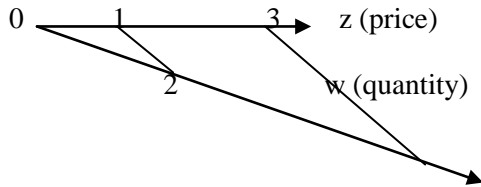


Figure 2

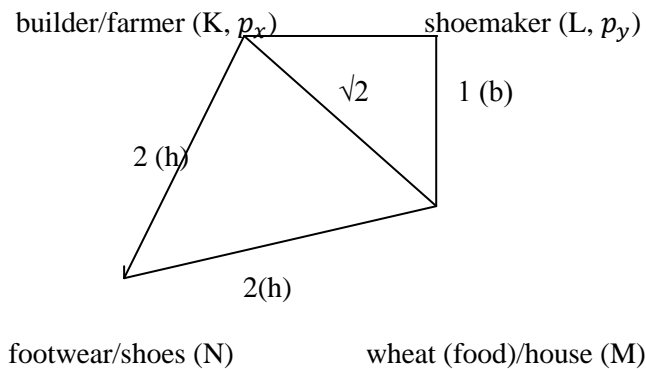


Figure 3

Consider Figure 3. For the general case of b/h in the place of $1/2$, i.e. given line segments b and h , it is straightforward to construct isosceles right triangle KLM with right-angle vertex L , and legs $LK=LM=b$, and form next, based on hypotenuse $KM=b\sqrt{2}$, isosceles triangle NKM of side $NK=NM=h$. From this second triangle, the law of cosines gives that $KM^2=h^2+h^2-2hh\cos N \Rightarrow KM^2=2h^2(1-\cos N) \Rightarrow KM=h\sqrt{2}\sqrt{1-\cos N}$, and hence, we should have that $b\sqrt{2}=h\sqrt{2}\sqrt{1-\cos N} \Rightarrow b/h=1-\cos N$. (To start by constructing first isosceles triangle NKM of arbitrary vertex N , and then form, based on its base $KM=h\sqrt{2}\sqrt{1-\cos N}$, isosceles right triangle KLM according to inscribed angle theorem, the length of $LK=LM$ only by chance will happen to be equal to b , because simply N is drawn arbitrarily. Point L , being the vertex of a right angle, “fixes” the construction; vertex N does not.)

This geometry confirms not only that if Aristotle wanted to present a diagram for his contract curve, this diagram would not have been Oresme’s figure, but also

that he did not use diagrams at all; certainly not in connection with the two earlier passages. How would he the moment his focus was *homo politicus*?...

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