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Why Should Exactly 1/4 Be Returned to the Original Owner: An Economic Explanation of an Ancient Recommendation

Olga Kosheleva and Vladik Kreinovich

Abstract What if someone bought a property in good faith, not realizing that this property was unjustly confiscated from the previous owner? In such situations, if the new owner decided to sell this property, Talmud recommended that a fair way is to return 1/4 of the selling price to the original owner. However, it does not provide any explanation of why exactly 1/4 – and not any other portion – is to be returned. In this paper, we provide an economic explanation for this recommendation, an explanation that fits well with other ancient recommendations about debts.

1 Formulation of the Problem

An ethical problem. Life is unfair. Many times in history, unjust governments forcibly and unjustly confiscated property from its rightful owners. Once this government is no longer in power, previous owners naturally want to either get this property back, or at least to get some compensation.

If this property was simply used by the unjust government itself, then the solution is straightforward: we should return this property to the original owner. But in many cases, the situation is not so clear. Someone may have bought this property with their own hard-owned money without realizing that it was confiscated unjustly; maybe after that, someone else have bought this property, etc. If this is an object of luxury, like a painting worth millions of dollars, then the current tendency is to return it

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to the original owner without any compensation to the current owner. This may be not fair to the new owner, but, honestly, if this new owner could afford to buy a multi-million dollar painting, losing this painting will not make him/her starving or homeless.

But what if this property was a small apartment or a small farm? The new owner did not do anything wrong, why penalize him/her? This may be an apartment on which he/she has saved money all his/her life – and now we confiscate this money and make the new owner homeless? This does not seem fair. So what can we do?

Ancient solution: general idea. The above ethical problem is not new – just like unjust confiscations of property are not new. Unfortunately, this happened in ancient times as well – and the resulting ethical problem appeared already in the ancient times.

This problem was the subject of many discussions. In particular, Talmud has the following solution to this ethical problem [5]:

- The new owner – who is not guilty of wrongdoing – is not penalized. He or she can keep this property, and if he/she sells this property, the new owner is entitled to get back the full price of this property, i.e., the price that he/she paid when he/she nought it.
- If the new owner is willing to sell this property, and the original owner is willing to buy it back, then the original owner has a priority – in such a situation, the new owner is obliged to sell to the original owner and not to anyone else.
- However, if this property is on sale, and the original owner is unwilling or unable to buy it, then the situation changes: the new buyer is now aware that he/she is buying a tainted property, so the new buyer is obliged to return a portion of this property to the original owner – either as a piece of land (or, alternatively, as a monetary payment to the original owner).

Ancient solution: details. The general idea sounds reasonable, but then it goes into details about what portion should be returned to the original owner. No general rule for determining this option is provided, only an example. In this example, when 12 months passed between the original confiscation and the forthcoming sale, the new buyer must return one quarter of the property to the original owner.

Why 1/4? Talmud rarely provides exact algorithms, it usually provides examples – and the intent was that these examples should be sufficient to produce the desired algorithm. This explanation by examples was typical in the ancient world – this is how mathematical ideas were explained; usually, by examples (see, e.g., [1]).

The fact that in this case, there was only one example seems to indicate that the authors of this advice believed that this example will be sufficient to come up with a general idea. So what is this general idea?

What we do in this paper. In this paper, we provide a possible explanation of 1/4.

2 Towards a Possible Explanation

How did the buyer accumulate the desired amount of money. Let us denote the amount that the buyer is paying by m. If the buyer had this amount a year ago, he/she could have bought a similar property already then. The fact that the buyer did not do it a year ago means that a year ago, the buyer did not have this amount of money. We can estimate the amount of money p that the buyer had a year ago if we know the interest rate r. Indeed, if a year ago the buyer had amount p, then now he has $p \cdot (1+r)$.

- Clearly, this amount $p \cdot (1+r)$ must be larger than or equal to m – otherwise, the buyer would not be able to pay now.
- It is also not possible that the amount $p \cdot (1+r)$ be larger than m – this would mean that the buyer accumulated the desired sum m before 12 months, in which cases would have bought a similar property at this past moment, and would not need to wait until the current moment.

So, the only remaining possibility is that $p \cdot (1+r) = m$, or, equivalently, that

$$p = \frac{m}{1+r}. \tag{1}$$

Let us now take fairness into account. A year ago, the original owner had the property worth m monetary units, and the buyer had the amount of money described by the formula (1).

This past year was not very good for the original owner – he lost his property – and probably, not very good for many other people, since unjust confiscations are usually a mass phenomenon. The buyer did not suffer, he/she has honestly earned his amount p. In general, in a normal situation, it would be fair for the buyer to also enjoy his/her interest, but in view of the general massively bad situation, it does not seem far to let the buyer enjoy the interest while many others suffered. We cannot do anything about the interest rate of others, but since the buyer kind of benefits from the misfortune of others, it sounds fair to not allow the buyer to benefit from the last year's interest when others suffer. From this viewpoint, the buyer is only entitled to the part of the property which is worth his/her last year's amount p – and it is fair to give the remaining amount to the original owner, as a partial compensation.

Let us describe this conclusion in numerical terms. According to historians, in the ancient Middle East, a person could get 1/3 of the original amount per year, i.e., we have $r = 1/3$; see, e.g., [3, 4]. Thus, according to the formula (1), the buyer is only entitled to the portion

$$p = \frac{m}{1+1/3} = \frac{m}{4/3} = \frac{3}{4} \cdot m$$

of the original property. The remaining amount

$$m - p = m - \frac{3}{4} \cdot m = \frac{1}{4} \cdot m$$

should be returned to the original owner.

This is exactly the amount recommended by the Talmud – so the above fairness arguments explain the mysterious appearance of 1/4 in this advice.

Auxiliary explanation. The same ancient interest rate $r = 1/3$ explains another historical fact – that, according to Hammurabi Code [2], a person who is unable to return his/her debt to another person becomes the other person's slave (i.e., an unpaid worker) for 3 years. Indeed, the interest rate of 1/3 means, in particular, that if we invest money in a person – e.g., by hiring a worker – we will get, through this person's labor, on average 1/3 of our original amount. So, each year, the person pays off 1/3 of the original debt – and thus, in 3 years will pay off his/her full debt.

However, in three years, the person just returns the original debt, not the accumulated interest. To get back more than the original amount, one needs to make the debtor work for a longer time – this is, e.g., why in such a situation, the Bible recommends six years of unpaid work.

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