An Bartering Based Trading System for RPGs

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Abstract

This is an idea of a more or less moneyless trading system. The player and NPCs among themselves can barter items based on their value. The interesting thing is the dynamism of this value.

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1 Main Idea

I like systems where you can exchange things instead of using money. Of course any currency can be a trading good, so the system can be adapted to both. One thing I do not like as gamer is if you find an item and in the inventory there is a value shown, say 10, and everybody just gives you 2 while buying it costs you 20. Am I so bad in haggling? Most times even a good skill can only push this to 7:12. On the other hand there is a buy-back option necessary if the player accidentally clicked on the wrong item. Why not buy and sell for the same value? Well the following is a description of a system which tries exactly that. Problems which must be handled are: How is an trading skill of use? How to prevent exploitation of the in-game characters? Inflation?

Basic concepts (of my idea):

- Directly exchange items

- Mass preservation

- NPC $\leftrightarrow$ NPC trades

- Value of the item depends on the both traders

- Bartering with the same person always yields the same price independent of the direction

- Fair skills

The concept of **mass preservation** in this context means that no item in the world vanishes or appears. Items might be transformed (e.g. ore $\Rightarrow$ weapon) or change their owner. This is where **NPC $\leftrightarrow$ NPC** traders bring more dynamism into the system. A player can remember a certain person which had a nice sword and go back. In most cases this person will still own the sword but maybe he sold it someone else. Potentially everything could be bought back to the same price from the same person as long as this person did not bartered it again.

However the **value** of an item is not constant. Selling flour to a baker is much better than selling it to a warrior. So everybody in the world desires things which allows to effectively earn better equipment by just trading (e.g. buying flour from the miller and selling it to the baker). The key is that it plays no role in which direction an item is exchanged. So buying flour in the bakery and selling it in the very same gives exactly 0 value to the player. How a value can be estimated for NPCs and how for the player is a little bit tricky.

The last thing on the list is the introduction of a **skill**. Lets take an example: I have 2 furs with a value of 20 each. I wanna by a sword with a value of 22 for the respective character. The NPC will not easily accept a 20:22 exchange. Of course if I give both furs 40:22 he will be accept that. What about some softer constraints? This can be solved by a trading skill. If the player's skill is higher than the opposite's he have a percentage variation for successful exchanges. So if this value is larger than 10% the 20:22 trade is ok. But, what does avoid that a player permanently buys below the value and sells above? This is covered by the player's value estimation.

2 Value Estimation

The value estimation is the most complex part because it must handle all the balancing.

2.1 General

First there must be a basic value v_0 given by the game designer. This must cover attributes like seldomness in the world and product chains. If a smith can create a sword from 3 ores that sword must have a higher value than 3 ores.

At some beginning point in the game everything has a value of v_0. If one finds an item it always has the

initial value to the finder. But this basic value might change during bartering. For example if a player buys an item with $v_0 = 10$ for 8 this specific item owned by the player will always show a value of 8 in the inventory. If he buys an item of the same type for 10 the shown value will be 9. So it should cover the average value which was necessary to get the ownership.

The same holds for NPC $\leftrightarrow$ NPC trades. Everybody will consider the price at which the item was bought as its modified basis value v'_0.

2.2 NPC side

Each item can be useful to an NPC if it is related to its profession. Useful items are considered to have a higher value. Setting profession based modficators would be complicated and limited. Less specific than a profession are the talents which can handle more cases. E.g. a warrior could use swords (x)or bows which most times includes that he has no interest in the other type. So he has the same profession but different interests.

Finally value depends on:

- If there is a talent using an item the value is increased v_u.

- If there is a talent which produces an item the value is decreased v_p.

- Bonus (dynamic) $v_d = \begin{cases} 2 \text{ if loosing bonus} \\ 1 \end{cases}$.

After determining the value for both individuals there is a dynamic extra value if the item gives a bonus. If a character uses an item and does not have an equivalent replacement the price is doubled or more. v_d is dynamic because it depends on the final outcome. If two characters exchange weapon against weapon there is an adequate replacement after the trade.

2.3 Player side

Normally the people before the compute decides which value something has. The problem is that it is not possible to let him give the numbers - he would always exploit the system. On the other hand it would be nice if not only the NPCs view is used. If an item is useful for the player he has a right to give it a higher value too. Unfortunately giving the player the same rules as for NPCs to increase the value of useful things everything would become more expensive the more the player is likely to wanna have it.

One possible solution is that the player uses only v'_0. On player side the value is only modified by the price to which the item was bought to avoid exploitation. So $v_d = 1$

2.4 Putting Things into a Formula

Let a and b be the two trading persons. Than a value could be computed as:

$$v = v'_0 \cdot \left(1 + \sum v_{u\{a,b\}_i}\right) \cdot \frac{1}{(1 + \sum v_{p\{a,b\}_i})} \cdot v_{d_a} \cdot v_{d_b}$$

The v'_0 depends only on the owner. The value is effectively stored for each item instance. Everything else exists twice except one of the traders is the player.

After the exchange v'_0 is computed from the new owners view. Therefore the sum of all given values is divided among the received items weighted by their unmodified v_0.

3 Exploits or Inflation?

I do not see any possibilities to exploit the system.

It should also be free of inflation. Things can be traded with a gain for one person but globally it is like energy in physics. Once a character holds an item which he appreciates very high he will not find another one in the world to make more profit. So during game everything moves to the characters which likes to have these items and without an additional source providing new content it should not be possible to be endless rich — or in other words to own everything.