<u>'Trade' today</u>

Dedicated to Uma and Shakti

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<u>Barter</u>

In its broadest sense, barter can be described as when someone has some quantity of good A but requires some quantity of good B; then happens upon someone else who has good B but requires good A in similar quantities.
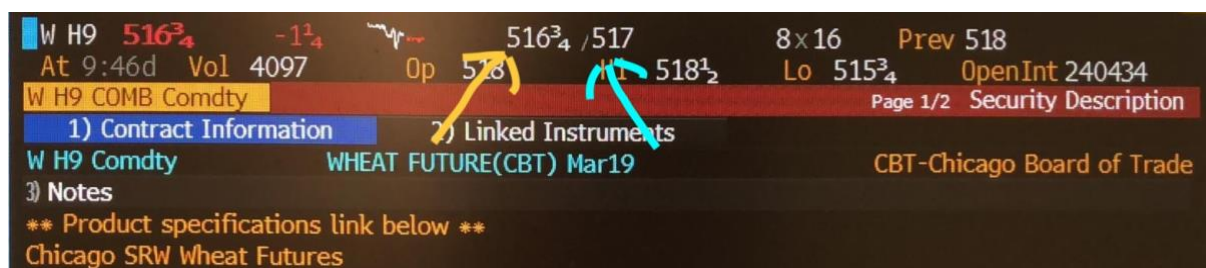
Standard dictionary definitions of barter such as: *'to trade by exchanging one commodity for another; to trade goods or services in exchange for other goods or services'* [Merriam Webster] and *'to exchange goods for other things rather than money'* [Cambridge] are somewhat reductionist, if not plainly meaningless; bringing in an extraneous concept of 'money' without elaboration.

Consider those wishing to exchange quantities of wheat grains for quantities of silver grains. Also consider those wishing to exchange quantities of silver grains for quantities of wheat grains. How would such people conduct their exchange? How would they determine their 'contract' size?

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<u>'Trade' today</u>

Below is a picture of a *quotation* for Chicago Board of Trade's 'March 2019 wheat' on a standard market trader's terminal. The yellow arrow points to 'the market bid' for March wheat at 516¾ (cents per bushel) and 'the market offer' for the same at 517. Also, the *quantity* that these bids and offers are valid in is given to the right hand side of this bid/offer quotation as '8x16,' meaning that 516¾ cents per bushel bid is valid up to 8 contracts of 5,000 bushels per contract and 517 offer is valid up to 16 contracts.

W H9 516¾ -1¼   516¾ /517   8×16   Prev 518
At 9:46d Vol 4097   Op 518   518½   Lo 515¾   OpenInt 240434
W H9 COMB Comdty   Page 1/2 Security Description
1) Contract Information   2) Linked Instruments
W H9 Comdty   WHEAT FUTURE(CBT) Mar19   CBT-Chicago Board of Trade
3) Notes
** Product specifications link below **
Chicago SRW Wheat Futures

If this bid/offer quotation is 'taken' by anyone, then 'the market's' *balance* of wheat and cents would change as follows: from the offer of 517 cents per bushel up to 16 contracts, 80,000 bushels of wheat would move *out* of 'the market' and 41,360,000 cents would move *in* to. From the bid of 516¾ cents per bushel up to 8 contracts, 40,000 bushels of wheat would move *in* and 20,670,000 cents would move *out* of 'the market.'

Netting this, 'the market's' balance of wheat would *increase* by 40,000 bushels and balance of cents *increase* by 20,690,000 cents, were both bid/offer quotations to be 'taken.'

In the example from our market trader's terminal, only one bid/offer quotation for one good is displayed. How would bids and offers for *multiple* goods be displayed *with* rapidity of comprehension in mind? We think of such a task with 'modern-day technology' as relatively easy. Bids/offers for different goods could be represented in various colours for alternate goods. For example, 416/308/516¾@517/309/417 could represent both bids and offers for wheat, corn and soy, where quotation's colour and its corresponding good is understood between parties. Employing various colours for such a multi-faceted display as you, reader, are currently reading on your computer and/or printout would have been very involved not so long ago. Another way of displaying bids/offers for multiple goods but involving much more *work* than by employing various colours in a single quotation, would be to list differing goods by their respective bids and offers:

Wheat	Corn	Soy	…
308@309	516@517	416@417	…

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Market garden maker

We make of earth's resources together and that fruit belongs to us together. A market maker in any good would have to make sure that their quotations are such that no greater quantity of this good/that which this good is quoted against crosses their table on quotations being hit and further quotations being established. Such considerations are there for market garden markers: by mere virtue of making a market, there's *flow* of goods through their hands. In order not to be considered a hoarder or 'profiteer,' no greater flow of goods should have crossed, currently crosses and will cross their table from changes in *their* quotations.

Consider a good such as firewood. From old twigs and branches fallen without compulsion by axes, forest floors are firewood's main source. However, insufficiently many people may be picking it up for their domestic uses, for a variety of reasons, resulting in forest-fire-inducing material being left around forest floors. How could such a problem be resolved? Firewood's quotation from market garden makers would be to serve in getting firewood at a locality, thereby removing fire hazards from forest floors, *as well as* to have firewood within locality for everyone's convenience. Consider a market maker's quotations:

200 for 24   // 24 for 200
300 for 24   // 24 for 300
400 for 24   // 24 for 400

<div align="center">500 for 24   //   24 for 500</div>

where it's understood that '200 for 24' means '200 grains of firewood for 24 grains of fine silver' and '24 for 200' means '24 grains of fine silver for 200 grains of firewood.'

Each horizontal pair of quotations when taken would lead to zero change in either firewood or silver across their table. Each horizontal pair also accommodates any quantity of firewood brought to them. All quantities of firewood would be accommodated by our market maker and whether their first interaction is with someone wishing to exchange firewood for silver or silver for firewood is immaterial. Say someone approaches with 300 grains of firewood. Then '300 for 24' is 'taken' and '24 for 300' is 'offered' in order to clear our market maker's table.

<div align="center">300 for 24   //   24 for 300</div>

300 grains of firewood moves on to their table and 24 grains of silver moves off; in order to move 300 grains of firewood off and 24 grains of silver on, their quotation changes to '24 for 300.' As 300 grains of firewood moves on to their table and 24 grains of silver moves off, firewood's 'historical quotation' is established at '24 grains of silver per 300 grains.' Suppose our market maker finds another nearby in a similar state.

<div align="center">

200 for 24   //   24 for 200
300 for 24   //   24 for 300
400 for 24   //   24 for 400
500 for 24   //   24 for 500

</div>

Our first market maker can interact with them to achieve their 24 for 300 goal:

<div align="center">*300 for 24   //   24 for 300*</div>

In so doing, our second market maker now gives up one silver coin from their table with 300 grains of firewood coming in. To rectify that, their quotation changes to *300 for 24*.

Now imagine there initially being an unlimited number of market makers within our locality. How could each market maker change in order to accommodate zero change in goods across their tables, from an initial interaction of someone approaching with 300 grains of firewood?

200 for 24 // 24 for 200	*200 for 24 // 24 for 200*	**200 for 24 // 24 for 200**
300 for 24 // <u>24 for 300</u>	*300 for 24 // <u>24 for 300</u>*	**300 for 24 // <u>24 for 300</u>**
300 for 24 // 24 for 300	*400 for 24 // 24 for 400*	**400 for 24 // 24 for 400**
500 for 24 // 24 for 500	*500 for 24 // 24 for 500*	**500 for 24 // 24 for 500**

In order for our first market maker to clear their table from marginal exchange, they seek 24 grains of fine silver for 300 grains of firewood. Our second market maker accommodates this and in so doing seeks 300 grains of firewood for 24 grains of silver. *Our second market maker mimics that person who first went to market makers.*

'Historical quotations achieved' here (24 grains of silver per 300 grains of firewood) are merely of interest rather than some pre-requisite of exchange. Compare this to the example

given in section 2; 'Trade' today, where exchange *is given in terms* of quotations *as opposed to* quantity v. quantity, which is that basis *which gives* quotations. Furthermore, these quotations have a 'gap' between them and 'minimum contract size' is an issue for market participants. How can we express the exchange mentioned in section 2; 'Trade' today, in terms of quantities v. quantities, as opposed to 'by quotation;' which puts horses before carts? 516¾/517 in 8x16 of 'contract size' 5,000 bushels gets resolved into:

<div align="center">

bushels for cents   //   cents for bushels

40,000 for 20,670,000   //   41,360,000 for 80,000

</div>

which is rather more of some market 'imbalance' than 'from quotation' with 516¾/517 would suggest.

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Now consider market makers in firewood, wheat and rice within a locality. Firewood's market maker interacts with someone wishing to offer firewood in exchange; wheat's with someone wishing for wheat in exchange and rice's with someone wishing to offer rice in exchange. Quantities of multiple goods displayed for exchange by multiple market makers *within* locality can be compacted into one for display *outside* locality by a single market maker. Can this be cleared; in so doing, clearing all market makers' tables? To establish that, our single display of quantities has to be re-arranged and compared.

200 for 24 // 24 for 200	60 for 12 // 12 for 60	700 for 48 // 48 for 700
300 for 24 // 24 for 300	70 for 12 // 12 for 70	800 for 48 // 48 for 800
400 for 24 // 24 for 400	80 for 12 // 12 for 80	900 for 48 // 48 for 900

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24 for 300 // 60 for 12 // 48 for 900

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A. (24 for 300 // 60 for 12) // 48 for 900

or

B. 24 for 300 // (60 for 12 // 48 for 900)

or

C. (24 for 300 // 48 for 900) // 60 for 12

</div>

From *A.* we get that:

<div align="center">

24and60 for 300and12 // 48 for 900

</div>

from *B.* we get that:

<div align="center">

24 for 300 // 60and48 for 12and900

</div>

and from *C.* we get that:

<div align="center">

24and48 for 300and900 // 60 for 12

</div>

All of these quantities are correspondent with our original but display differing combinations. For example, in *C.*, with 24 and 48 considered as 24 grains of silver and 48 grains of copper respectively, making '24 and 48 for 300 and 900' as some desired exchange of firewood *and* rice for silver *and* copper. In *B.*, '60 and 48 for 12 and 900' would be a desired exchange of wheat *and* copper for gold *and* rice, with 12 considered as 12 grains of

gold. Some might remember using silver shillings and copper pennies in payment but without some fiat, how do we determine exchange rates between them?

Another way of arranging our original combination of quantities is into one single quantity:

24 for 300 // 60 for 12 // 48 for 900

↓

24and60and48 for 300and12and900

which has a rigidity of quantity exchange requirements that either of *A*, *B* or *C* lack but would result in complete clearing of market makers' tables over either of *A*, *B* or *C* were it to happen.

If there are market makers n in n various goods, then there are manifest comparisons $\frac{1}{2}\,n(n-1)+1$ between pairs of goods to be made, which can easily be shown.

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In summary, our original combination of quantities required to clear our market makers' tables within our locality (but for outside locality) was:

24 for 300 // 60 for 12 // 48 for 900

which can be expressed in either of:

24and60 for 300and12 // 48 for 900
or
24 for 300 // 60and48 for 12and900
or
24and48 for 300and900 // 60 for 12
or
24and60and48 for 300and12and900

where *complements* are sought outside of locality: meaning where market makers within our locality require 'copper for rice,' say, outside of locality they'd require someone wanting 'rice for copper' in order to clear their own tables.

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Proposal for use of Indus Valley script

The 'Indus Valley' or 'Indus Saraswati' civilisation, remains of which were first uncovered only in early C20th, flourished along banks of long-gone rivers across the greater part of northern India, though could be much larger but for lack of investigation. Very little to nothing can be surmised about inhabitants' social organisation from archaeological remains apart from coalescing under some undifferentiated civic organisation.

Inhabitants' skill in urban engineering surpassed that of other civilisations, such as in Mesopotamia and wasn't paralleled again until ancient Rome, many millennia later. Indus inhabitants were far-travelled traders, as testified by their goods, including technically commanding engineered products such as drilled carnelian (near diamond hardness) beads being found throughout Mesopotamia and the Gulf region.

Our only remains of literacy are from scripts found mainly on stone seals/stamps. Yet, the script, as well as purpose of use of these seals remains unknown. Script segments are usually around 5-8 symbols in length, with the longest found being no more than 26 symbols. These seals have been found in numerous sites not only amongst Indus cities but also in Mesopotamia; which gives us a clue as to their likely role – something to do with trade; technicalities of which most linguists and archaeologists aren't usually at hand with consistently compared to market traders.

Modal symbol

Most attempts at translation of meaning of Indus script symbols have been built on 'symbol decipherment.' Such a 'methodology' is rather ambitious, as testified by the coincidental 'decipherment' of hieroglyphs through the Rosetta Stone in C18th – which had the same text expanded in hieroglyphs with other known languages and after some considerable effort led to a translation of meaning. Why ancient Egyptians buried their dead in ornate fashions over more hygienic practice hasn't been revealed to date in any hieroglyphic text translation but otherwise interesting social customs have been.

Instead of duplicating such approaches, we turn to the *modal* symbol. That there is a modal symbol amongst script segments is interesting in its own right. That this symbol appears *within* script expansions, *as well* as sides is also interesting.

On the modal symbol – *its position usually occurs at the end of the script segment but can be found elsewhere. Some scholars assumed it was a value or denoted a value. Others assumed they represented phonemes and others still assigned a genitive suffix meaning to it, going so far as to assign a sound to it. Parpola (1967) assigned the representation of a boat to it by making links with the Sumerian symbol for*

a boat. In most expansions of script meaning, a phoneme structure is assumed. Summary from: Lal, B. B. "On the Most Frequently Used Symbol in the Indus Script." East and West, vol. 29, no. 1/4, 1979, pp. 27–35. JSTOR, www.jstor.org/stable/29756504.

A 'value symbol,' such as '£' in '£6.54,' is a facet of modern fiat systems but wouldn't explain why the modal symbol appears variously at the beginning and sides of script segments: '547£2' or '234£' or '23£12£8' has no meaning in modern fiat system terminology. Furthermore, that the modal symbol can appear *twice* within a segment has no analogy in 'value symbol' notation of today.

A more involved and subtle utilisation of this modal symbol must be in play than a 'value symbol.' Market quotations such as '516@517' can be 'read out' ("five hundred and sixteen at five hundred and seventeen") and so have a 'phoneme structure' but wouldn't be considered of 'phonetic structure' by standard linguists; exposing limitations of their own comprehension. When a 'material object' representation has been offered, there's no context offered to usage. Does '@' ("at") in '516@517' count as a 'material object?' The modal symbol is proposed to be comparable to '//' or '@' as utilised earlier in parts. Other symbols used in segments on stamps likely represent various goods, with their quantities enumerated wherever this stamp was utilised. Storage 'space' should also be considered a quantity; just as that which is stored within storage is considered a quantity.

A selection of seals is presented below. Seal A. is likely to represent desired exchange of grains to be harvested for grains harvested. Whether this was meant to be read 'from left to right' or 'from right to left' is immaterial; as meaning would remain unaltered especially in context of where this seal was going/coming from with those utilising it. Symbols' meaning in terms of which goods they represented requires further investigation.

A.

Sandeep Jaitly, 8th July 2020.

Further reading:

In Search of the Cradle of Civilization, *Georg Feuerstein*, *Subhash Kak & David Frawley*, Motilal Banarsidass Publishers ltd., 1995.

Investigations into the Method of the Social Sciences with Special Reference to Economics, *Carl Menger*, New York University Press, 1985.

The Eleven Pictures of Time, *C. K. Raju*, SAGE publications, 2003.

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