Research article

The conceptual semantics of "money" and "money verbs"

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Abstract
The central purpose of this study is to apply the NSM (Natural Semantic Metalanguage) method of semantic-conceptual analysis to the word 'money' and to related "economic transaction" verbs, such as 'buy', 'sell' and 'pay', as used in everyday English. It proposes semantic explications for these words on the basis of conceptual analysis and a range of linguistic evidence and taking account of lexical polysemy. Even in its basic meaning (in a sentence like 'there was some money on the table'), 'money-1' is shown to be surprisingly complex, comprising about 35 lines of semantic text and drawing on a number of semantic molecules (such as 'country', 'number', and 'hands'), as well as a rich assortment of semantic primes. This 'money-1' meaning turns out to be a crucial semantic molecule in the composition of the verbs 'buy', 'sell', 'pay', and '(it) costs'. Each of these is treated in some detail, thereby bringing to light the complex semantic relationships between them and clarifying how this bears on their grammatical properties, such as argument structure. The concluding section considers how NSM semantic-conceptual analysis can help illuminate everyday economic thinking and also how it connects with Humanonics, an interdisciplinary project which aims to "re-humanise" economics.
Keywords: *money, lexical semantics, commercial transaction verbs, semantic molecules, Natural Semantic Metalanguage, Humanomics*

Научная статья

Концептуальная семантика «денег» и «денежных глаголов»

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Аннотация

Цель данного исследования – применить метод Естественного Семантического Метаязыка (ЕСМ) для семантико-концептуального анализа существительного «деньги» и связанных с ним глаголов, относящихся к «экономическим трансакциям», таких как 'buy' (покупать), 'sell' (продавать) и 'pay' (платить), употребляемых в бытовом английском языке. Он предполагает семантическую экспликацию этих слов посредством их концептуального анализа, с учетом их языкового употребления и лексической полисемии. Даже в своем первичном значении (в таких предложениях как «на столе лежали деньги») лексема 'money-1' (деньги-1) демонстрирует удивительную сложность, включая около 35 строк семантического текста и опираясь на ряд семантических молекул (таких как «страна», «число» и «руки»), а также богатый набор семантических примитивов. Выяснено, что значение 'money-1' выступает как ключевая семантическая молекула в структуре глаголов 'buy', 'sell', 'pay' '(it) costs'. Каждому из них дается детальное описание, благодаря чему выявлены сложные семантические отношения между ними и влияние, которое они оказывают на грамматические свойства глаголов. В заключительном разделе показано, как семантико-концептуальный анализ ЕСМ может пролить свет на бытовое экономическое сознание и показать его связь с междисциплинарным проектом "Humanonics", направленном на «гуманизацию» экономики.

Ключевые слова: *деньги, лексическая семантика, глаголы коммерческих сделок, семантические молекулы, Естественный Семантический Метаязык, гуманомика*

1. Background and aims

The Natural Semantic Metalanguage (NSM) framework is well-known, so only a very brief outline will be provided here, focussing on its application to lexical semantics. In the NSM framework, lexical meanings are described using paraphrases (semantic explications) written in a small, cross-translatable vocabulary of semantic primes and semantic molecules (cf. Goddard & Wierzbicka 2014, Goddard 2021, Goddard, Wierzbicka & Ye In press/2021). The NSM approach has been employed in hundreds of studies of lexical and grammatical phenomena in dozens of languages. For a brief overview, see Gladkova and Larina (2018a, 2018b). A bibliographical database and other helpful resources are available at (URL, December 12, 2021).[1]

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[1] https://www.nsm-approach.net

In NSM theory, semantic primes are regarded as the irreducible and universal bedrock of human thinking. After five decades of empirical research and conceptual analysis (cf. Wierzbicka 2021), 65 primes have been identified and their combinatorial grammar has been largely described. Semantic primes are like atoms or elements of human thought as it can be expressed in language.[2]

Semantic molecules are relatively basic meanings, themselves decomposable into primes, that function alongside primes as building blocks in the composition of yet more complex concepts. It is believed that some semantic molecules may be universal or near-universal, while others are clearly language/culture-specific. Semantic molecules play an indispensable role both in building up highly complex concepts and in the overall architecture of the lexicon.

Semantic explications are essentially paraphrases written in semantic primes and molecules [3]. As such, they are free of definitional circularity, provide very fine-grained depictions of meaning, and except for any language/culture-specific molecules, they ought to be readily cross-translatable between languages. Explications are the result of a careful process of conceptual analysis, informed by the evidence of linguistic usage and disciplined by the requirement that it be conducted with the narrow confines of NSM lexicon and syntax. Because semantic explications use only very clear and relatively simple words, they are in principle accessible to people without specialised training in linguistics. This opens the way for many practical applications in education, intercultural communication, health messaging, ethics, and 'easy language' projects (Goddard ed. 2018, 2021), as well as applications in human sciences other than linguistics, such as psychology, anthropology, musicology, philosophy, and, recently, economics. In §4.3 we report on connections between NSM work and the Humanomics project led by Vernon Smith and Bart Wilson (2019), which is aimed at rehumanising economics.

The central purpose of the present study is to apply the NSM method of semantic-conceptual analysis to the word 'money', as used in everyday English, and to several related verbs, 'buy', 'sell', 'pay, and 'cost' – again, as used in everyday English. We add this qualification to make it plain that we are writing as semanticists, and as such are not concerned with technical understandings by economists, anthropologists, sociologists, and other experts.

2. Conceptual semantics of 'money'

2.1. Polysemy of 'money'

To approach the polysemy of the word 'money' and the challenges of explicating its multiple meanings, it is a useful warm-up to look briefly at a couple

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[2] Two further clarifications: (i) Properly speaking, primes should be referred to as 'semantic/conceptual', but for simplicity we generally use only one modifier at a time. (ii) The relationship between semantic/conceptual primes and their exponents in individual languages is not always one-to-one, on account of language-specific lexical polysemy and allolexy.

[3] Grammatical function words are also allowed in NSM texts, as are some portmanteau words, e.g. 'often = at many times".

of dictionary definitions for what is arguably its simplest meaning. The following show two such definitions from the Collins family of dictionaries, Collins dictionaries being more systematic and more lexicologically sound than most contemporary English dictionaries.

> *Money is the coins or bank notes that you use to buy things or when you pay for a service* – Collins Cobuild English Language Dictionary, 1987.

> *Money is the coins or bank notes that you use to buy things or the sum that you have in a bank account* – Collins Online English Dictionary, 2019.

Both these Collins definitions have a certain appeal on account of their relatively non-technical quality. Notably, both are attempts to define what we are terming 'money-1', i.e. concrete, physical money (termed "money objects" by some theorists) in the form of 'coins or bank notes'. Both versions mention that money is used to 'buy things'. The 1987 version also mentions that money can be used to 'pay' for a service. The 2019 version drops this detail, but adds that money can also be 'the sum that you have in a bank account', thereby, on our analysis, attempting to cover part of the range of use of 'money-2'.

In any case, both definitions are ultimately circular because it is impossible to define expressions such as 'coins', 'bank notes', 'bank account', 'buy' and 'pay', without reference to 'money' itself.

The meaning we designate 'money-1' concerns physical money, i.e. coins and notes, that can be handled, can be in a real physical place, such as on a table, in a drawer, or in someone's purse or wallet, in a piggy bank. Some clear examples of its use are given in (1)–(4) below. This meaning collocates with words like 'hand', 'pocket', and 'wallet', with the noun 'change', and with the verb 'to count'. [4]

> (1) *In one of the bedrooms, there was some money on the table.*
> (2) *Teaching kids to count money can be a little confusing for them at first.*
> (3) *I asked my friend Kenny "Do you have any money on you?"*
> (4) *Identifying money is the foundation of teaching money management to kids.*

We claim (and propose to demonstrate shortly, by explications) that 'money-1' is the simplest and most basic of the various meanings of the word 'money'. We take for granted that it is developmentally the first-acquired by young children. It is not necessarily, however, the most frequently occurring meaning in corpora. 'Money-1' is explicated in §2.2 below.

The meaning we designate 'money-2' is a more abstract idea, linked with 'money-1' and conceptually dependent upon it. Some illustrative examples of its use are given in (5)–(8) below. As shown in the first two of these examples, 'money-2' is often found in have-constructions. We will explicate 'money-2' in §2.3 below. To anticipate, we argue that the idea behind 'money-2' is that one is able to "lay hands" on 'money-1' and do with it as one wishes.

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[4] In formulating these generalisations, we relied mainly on two corpora: Collins Wordbanks Online and COCA (Corpus of Contemporary American English).

(5) *They have a lot of money.*
(6) *Mary has $50,000 in the bank.*
(7) *We are trying to save money for a house.*
(8) *The university is very short of money.*

We see the need to recognise at least one additional sense, which will designate 'money-3'. As shown in examples (9)–(11), in this use the word 'money' functions, one might say, as a "discourse topic". This meaning or use will not be explicated or discussed further in the present study.

(9) *Money talks.*
(10) *Money is the root of all evil.*
(11) *Money makes the world go round.*

We do not wish to say that all uses or meanings of the word 'money' can be reduced to these three, especially if the vast network of fixed expressions and common collocations is taken into account. The Oxford English Dictionary entry for 'money' comes to 53 pages in length. As far as we can tell, however, all dictionaries recognise at least the three senses distinguished above, and all of them identify the sense linked with 'coins and bank notes' as the primary or simplest sense.

2.2. Explicating 'money-1'

The reader should be warned that the explication for 'money-1' may seem remarkably complex, even though it is no more so than explications of words for natural kinds and life-forms, such as 'cat' and 'fish' (Goddard 2020) or artefact words such as 'cup' and 'spoon' (Wierzbicka 1985, 2015). Any impression that the meaning of 'money-1' must be conceptually fairly simple is arguably a result of its extreme "over-learning" and constant reinforcement in daily life.

Our proposed explication consists of about 35 lines of semantic text, comprising more than 500 words in total (this tally includes English-specific function words, such as 'of', 'with', 'about', 'the', 'a'). It uses no less than 33 semantic primes, i.e., half the total prime inventory, and about 15 semantic molecules. Among the primes, nominal elements and expressions such as 'people', 'someone' and 'someone else' are among the most common, along with mental and speech predicates such as 'want', 'know', 'think' and 'say', the "quantity" prime '(how) much/many', and of course 'do', 'happen' and '(be) mine'. Among the molecules, 'country' and 'number' play a prominent role, as do 'hands' and 'hold', reflecting the importance of handling and exchanging coins and notes.[5]

The explication falls into six sections, which can be labelled as follows. These section labels are not part of the explication proper but are solely for expository convenience.

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[5] The explication also uses several portmanteaus, e.g. 'often' for 'at many times'; 'they' sometimes for 'these people', sometimes for 'this someone', and 'have to' for 'can't not'.

[a] what money is for, [b] two kinds of money: coins and notes, [c] when someone holds one note/coin …, [d] when many notes/coins are in one place …, [e] how it often happens when people do something with money (prototypical scenario), [f] how people can think about money

It will be helpful to first examine and comment on each section in turn, before combining them into the full explication.

Section [a] is given below. The first line presents 'money-1' as an "essentialised" concept, i.e., as 'something of one kind', for which the word-form 'money' serves as an identifying label. Line two says that people in many countries use it very often, and the remainder of the section spells out two typical or generic purposes. The first is focussed on 'things', and is associated with the intention 'I want this thing to be mine'. The second is focused on people, and is associated with the intention 'I want someone to do something'. These twin components in a sense anticipate the ideas that money can be used to "buy" things and to "pay" people to do things; or, using even more complex terminology, the idea that money can be used to acquire "goods" and "services".

> *'Money-1'*
> a. something of one kind, people can say what kind with the word 'money'
>   people in many countries [m] do something with it very often
>   often people do something with it because they think like this about
>   something: "I want this thing to be mine"
>   often people do something with it because they think like this about
>   someone: "I want this someone to do something"

Section [b] of the explication moves to concretise or physicalise 'money' by saying that it comes in two kinds, corresponding to coins and notes, respectively. Obviously, we cannot use words like 'coins' or 'notes' in the explication, because to do so would incur circularity, but 'things of one kind' (coins) are described in terms of their composition (made of something very hard and shiny like gold or silver), their small size, and their shape (flat and round). The other kind (notes) are described as being made of something like paper, as being flat, very thin, and having straight sides. Both kinds of money are "easy to handle". A person can hold many of them in one hand, and can hold one, or, in the case of notes, many, between two fingers. These properties are of course by design, in order to allow people to easily handle and exchange money.[6]

> b. there are two kinds of 'money'
>   things of one kind are made [m] of something very hard [m], something
>   shiny [m], like gold [m], like silver [m]
>   they are very small, they are flat [m], they are round [m]

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[6] In full explications of 'coin' and 'note' there would be more detail about their "design", i.e. about the relationships between form and function, as expected in explications of artefact terms (Wierzbicka 1985).

> someone can hold [m] many of them in one hand [m], someone can hold
> one of them with two fingers [m] of one hand
> things of the other kind are made of something like paper [m]
> they are not very small like the other kind, they are very thin [m], they are
> straight [m] on all sides
> someone can hold [m] many of them in one hand [m], someone can hold
> many of them with two fingers [m] of one hand

Section [c] continues to say that when a person is holding a single coin or note, 'they can see a number on it', and, often, a word at the same time. The word is further described, using an example, as 'a word like 'dollar' ('pound', 'euro', etc.). The idea here is that in any given country there will be one "premier" word that designates the main unit of currency, be it 'dollar', 'pound', 'euro', or some other locally prominent word. [7] With the number and word, the section continues, a person can say about an individual coin or note "it is this much". The idea that every individual money object bears testimony, so to speak, of its value and denomination seems essential to the concept of 'money-1'. The words and numbers are necessary for people to know the specific values of different coins and notes and, relatedly, to know how much money they need in order to buy a thing or to pay for a service. That is not the end of it, however. As stated in the final two components of section [c], the coin or note will carry some other visible sign, be it words or images (e.g., a depiction of the monarch, national hero, national flag) to indicate the country to which it belongs[8] and in which it can be an effective instrument for human action. These components are necessary to distinguish real money both from "play money" (as used in children's games) and from 'tokens' of various kinds.

> c. when someone holds one of these things, they can see a number [m] on it
> often they can see a word on it at the same time, a word like 'dollar'
> ('pound', 'euro', etc.)
> they can say about it: "it is this much", they can say it with this number,
> with this word
> at the same time, they can see some other things on it; it can be some other
> words, it can be something else
> because of this, they can know in what country something can happen as
> people want if they do something with it

The next section, section [d], captures a further essential characteristic of 'money-1', namely, that a collection or combination of notes and coins can usually be "summed up" and given a total value: i.e., that someone 'can say about them all: "it is this much". This component is necessary in order to establish that not only do coins and notes have individual values, but that these values all fit into a single

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[7] The names of different currencies are of course highly salient linguistic elements in complex discourses in international economics, finance and business.

[8] A slight problem with this component is that the phrasing seems to imply that a given currency is intended for a single country only. This would not be appropriate in the case of euro, for example.

system.[9] The second line of the section mentions that 'a short time' may be needed before a total can be given, allowing time for a person to calculate. The final component in the section indicates that the total can be stated using 'number words' and 'some other words' at the same time. This echoes the phrasing used about individual notes and coins earlier, but this time the phrasing is in the plural, which allows for more complex combinations of numbers and denominations.

> d. often when someone sees many of these things in one place, it is like this:
> after a short time this someone can say about them all: "it is this much"
> they can say it with number words if they say some other words at the same
> time, words like 'dollar' ('pound', 'euro', etc.)

The penultimate section, section [e] below, sets out an idealised prototypical scenario for doing something with money-1, introduced by 'it often happens like this: …'. Briefly, this scenario involves two people, a "price", and someone literally "handing" some money to another person and in the process relinquishing possession of it. In more detail, one person (let's call him or her the 'primary actor') has the idea that some purpose can be achieved ('something can happen here as I want') if they do something with money 'as someone else wants'. The primary actor understands that in order to do it, they have to know how much money is required (the "price") and that the other person can give this information. With this in mind, the primary actor does something 'with the hand', the details of which are given in the final indented part of section [e]. Putting it colloquially, some money "changes hands" and in the process ceases to belong to the primary actor.

This section of the explication is particularly important in providing a conceptual backdrop to "money verbs" like 'buy', 'sell' and 'pay', which we will examine in §3.

> e. when people do something with 'money', it often happens like this:
> someone thinks like this:
> "something can happen here as I want if I do something now with
> 'money' as someone else wants
> before I do it, I have to know how much, this someone can say it to me"
> because this someone thinks like this, they do something with the hand
> when they do it, it is like this:
> at one moment there is 'money' in this someone's hand, it is this
> someone's
> a moment after, this 'money' is not in this someone's hand anymore, it
> is in someone else's hand
> at the same time, it is not this someone's anymore

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[9] It is worth noting that words for money in different languages may differ in their grammatical properties. English 'money' is an uncountable singular "mass noun"; Italian has both the countable *soldo/i* (masculine) and the uncountable *denaro* (singular masculine); Russian *den'gi* is plurale tantum. Such grammatical differences presumably reflect subtle semantic-conceptual differences which are impossible to pursue here.

Two further comments are in order about the idealised scenario in section [e]. First, the scenario does not correspond perfectly to either "buying" or "paying" but sits somewhere in between, as we will see when these verbs are explicated in §3. Second, on a finer point of detail, when the money changes hands it is stated only that in so doing it becomes 'not this someone's anymore', not that it necessarily comes to belong to the person receiving it. This is because in many situations, even in a village market, the person who receives a payment of money often does so on behalf of someone else.

Finally, section [f] sets out a way of thinking about 'money-1', which though taken for granted in everyday life, is actually quite peculiar; namely, that because coins and notes are "changing hands" (circulating) all the time, individual items of money-1 are not anyone's permanent possessions. As the component says, when people see 'money-1' somewhere, they realise that although it belongs to someone in particular now, it was someone's else's before, and will be someone's else's later.

> f. because something like this often happens, when people see 'money' somewhere, they can think like this:
>> "it is someone's now, it was someone else's before, it can be someone else's later"

Readers will be naturally be eager to see how the proposed explication of 'money-1', i.e. concrete, "handle-able" money, can be extended or built upon in order to accommodate money in its non-concrete sense, for instance, to speak about having money-2 in the bank, buying things on credit, and so on. We will move to this in section 2.3.

Before that, however, the full explication for 'money-1' is presented in [A] below. Seeing (and reading) the explication as a whole will reinforce the impression of complexity, but at the same time help one to appreciate its coherence as a whole and its "flow", i.e., the logical progression and interrelationship between the various sections.

> [A] money-1
>
> A. WHAT MONEY IS FOR
> a. something of one kind, people can say what kind with the word 'money'
>> people in many countries [m] do something with it very often
>> often people do something with it because they think like this about something: "I want this thing to be mine"
>> often people do something with it because they think like this about someone: "I want this someone to do something"
>
> B. TWO KINDS OF MONEY: COINS AND NOTES
> b. there are two kinds of 'money'
>> things of one kind are made [m] of something very hard [m], something shiny [m], like gold [m], like silver [m]
>> they are very small, they are flat [m], they are round [m]
>> someone can hold [m] many of them in one hand [m], someone can hold one of them with two fingers [m] of one hand

things of the other kind are made of something like paper [m]

they are not very small like the other kind, they are very thin [m], they are straight [m] on all sides

someone can hold [m] many of them in one hand [m], someone can hold many of them with two fingers [m] of one hand

C. WHEN SOMEONE HOLDS ONE NOTE/COIN …

c. when someone holds one of these things, they can see a number [m] on it

often they can see a word on it at the same time, a word like 'dollar' ('pound', 'euro', etc.)

they can say about it: "it is this much", they can say it with this number, with this word

at the same time, they can see some other things on it; it can be some other words, it can be something else

because of this, they can know in what country something can happen as people want if they do something with it

D. WHEN MANY NOTES/COINS ARE IN ONE PLACE …

d. often when someone sees many of these things in one place, it is like this:

after a short time this someone can say about them all: "it is this much"

they can say it with number words if they say some other words at the same time, words like 'dollar' ('pound', 'euro', etc.)

E. HOW IT OFTEN HAPPENS WHEN PEOPLE DO SOMETHING WITH MONEY

e. when people do something with 'money', it often happens like this:

someone thinks like this:

"something can happen here as I want if I do something now with 'money' as someone else wants

before I do it, I have to know how much, this someone can say it to me"

because this someone thinks like this, they do something with the hand

when they do it, it is like this:

at one moment there is 'money' in this someone's hand, it is this someone's

a moment after, this 'money' is not in this someone's hand anymore, it is in someone else's hand

at the same time, it is not this someone's anymore

F. HOW PEOPLE CAN THINK ABOUT MONEY

f. because something like this often happens, when people see 'money' somewhere, they can think like this:

"it is someone's now, it was someone else's before, it can be someone else's later"

Before closing off this section, a reminder that we are not trying to explain what money "really is", from the point of view of economics, philosophy, sociology, or anthropology. Ours is an exercise in the lexical semantics of ordinary words, as used by ordinary people in everyday contexts.

2.4. Explicating 'have money-2' ("have money" constructions)

As already mentioned, the word 'money' has also another sense, more abstract. It is this more abstract sense that is used when it is said, for example, that in the

modern world only a small portion of all the 'money' in a country takes the form of notes and cash. A common estimate is less than 5%.[10] So, it is unsurprising that many everyday uses of the word 'money' are not about "cash money", but about the less concrete 'money-2'. See sentences (5)–(8), which are repeated here for convenience.

(5) *They have a lot of money.*
(6) *Mary has $50,000 in the bank.*
(7) *We are trying to save money for a house.*
(8) *The university is very short of money.*

We will explicate the meaning 'money-2' in the context of have-constructions, such as those used in (5) and (6) above. Cross-linguistic research suggests that "have-possessive" constructions (and analogous constructions in other languages) typically have a topic-comment structure (cf. Stassen 2009: Ch 2). Taking a lead from this literature, as we done in relation to other so-called alienable possessive constructions (Goddard & Wierzbicka 2019), we propose that a sentence like *Mary has a lot of money* can be explicated as shown in [B1] below.

The explication begins with a line expressing the speaker's intention to say something about a person (in this case, Mary), while the following components, introduced by 'it is like this: …' depict a situation involving Mary. The have-construction, in essence, provides a way of framing a situation so it can be seen as <u>about</u> Mary.

The content of the situation is set out in components (c) and (d). They say, essentially, that if Mary wants, she is able to "lay hands" on much physical 'money-1' and that this 'money-1' will be hers and at her disposal. For background on the formulation of the (d) components, see Goddard and Wierzbicka (2016, 2019).

[B1] *Mary has a lot of money-2.*
    a. [I want to say something about this someone (Mary), I say:]
    b. it is like this:
    c. if Mary wants, there can be much money-1 [m] in her hands [m]
    d. she can say about it "it is mine", she can do some things with it as
        she wants

Explication [B2] shows how this works with a designated amount of money.

[B2] *Mary has $10,000 (in the bank).*
    a. [I want to say something about this someone (Mary), I say:]
    b. it is like this:
    c. if Mary wants, there can be $10,000 in her hands [m]
    d. she can say about it "it is mine", she can do some things with it as
        she wants

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[10] Briefly put, commercial banks create 'money-2' through their ability to lend much more money-2 than they hold in physical form, i.e., as money-1, cf. [https://en.wikipedia.org/wiki/Money_creation]

As for negative sentences, such as *John has no money*, they can be explicated as shown in [B3]. The negative element appears in component (b).

[B3] *John has no money-2.*
    a. [I want to say something about this someone (John), I say:]
    b. it is not like this:
    c. if this someone (John) wants, there can be money-1 [m] in his hands [m]
    d. he can say about it "it is mine", he can do some things with it as he wants

We note at this point that the 'have money-2' construction is needed as a semantic molecule in some explications, such as for the verb 'pay' (see §3.3 below), and probably for a great many other "money words", both verbs and nouns alike.

3. How to do things with 'money': four English "money verbs"

Verbs like 'buy', 'sell', 'pay' and 'costs', often termed "commercial transaction" verbs, have attracted a fair amount from syntacticians on account of the fact that they can take up to four "arguments", as shown by the underlined noun-phrases in (12a)–(12c) below (e.g. Croft et al. 2001, Hudson 2002, Levin & Rappaport Hovav 2005, Van Valin n.d.). The same sentences show another property, which can be seen as either syntactic or semantic according to one's framework; namely, that there are systematic mappings or correspondences between the roles occupied by the noun-phrases. For this reason, 'buy' and 'sell' have sometimes been termed "relational antonyms" or "converses" (Cruse 1986). Frame Semantics (Fillmore & Atkins 1992, Ruppenhofer et al. 2016) recognises a distinct Commercial Transaction Frame with four frame-specific roles, and sees the various verbs as profiling or highlighting particular roles.

(12a) *John bought a car from Susan for $6,000.*
(12b) *Susan sold her car to John for $6,000.*
(12c) *John paid Susan $6000 for her car.*

The interrelationships between 'buy', 'sell', 'pay' – and other "money verbs", as we will term them – indeed pose a fascinating puzzle. In the following we will approach this puzzle head-on, by setting out to explicate these three verbs, and an additional one, 'cost', in sections §3.1–§3.4, respectively. All the explications employ 'money-1' or 'have money-2' as a semantic molecule.

3.1. Explicating 'buy'

We will start with 'buy'. Consider explication [C], for the sentence 'John bought something (a shirt) today' (for convenience, the explicated sentence is given in the past tense). The explication has a two-part structure. The first section sets out 'What Happened', and the next section gives a Prototypical Scenario for someone buying something.

In the 'What Happened' section, line (a) states that the actor (John) 'did something as people often do when they do something with money-1 [m]'. In mentioning 'money-1' in this fashion the explication evokes or (to use a stronger word) activates that part of the explication of 'money-1' (namely, section [e]) that captures how people often do things with money.

The next two lines state that this resulted in something happening to something (a shirt): previously, this item was not John's, afterwards it was. Notice that although 'money-1' (roughly, "cash") is used to characterise 'buying' as a common "money act", this does not entail that John necessarily used money-1 to make his purchase. The explication is fully compatible with use of credit card or bank transfer.

The 'Prototypical Scenario' section begins line (d): 'often when someone does this, it is like this: ...'. Line (e) places the prototypical actor (the buyer) 'in a place with some other people', bringing to mind a place such as a market or a shop. Next, the lines in (f) spell out the prototypical actor's mental state: thinking about 'something in this place' that 'I want this thing to be mine'; assuming that 'it can be mine if I do something with some money-1 as someone here says [11]; and understanding that 'after I do it, this money-1 will not be mine anymore, it will be someone else's; at the same time, this thing will be mine, as I want'. Component (g) essentially states that the buyer acts accordingly. The final component (h) rounds off the scenario by saying that as a result the buyer can then 'do something with this thing, as they want' (which would typically be to take hold of it) and that 'a short time after' the purchased item 'is not in this place anymore, it is somewhere else'.

[C]   *John bought something (a shirt) today*

WHAT HAPPENED

a.   this someone (John) did something today
        as people often do when they do something with money-1 [m]
b.   something happened to something (a shirt) because of it
c.   before it happened, this thing was not John's, afterwards it was John's

PROTOTYPICAL SCENARIO

d.   often when someone does this, it is like this:
e.   this someone is in a place with some other people
f.   this someone thinks like this about something in this place:
        "I want this thing to be mine
        it can be mine if I do something with some money-1
            as someone here says
        after I do it, this money-1 will not be mine anymore, it will be
            someone else's
        at the same time, this thing will be mine, as I want"

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[11] The phrase 'as someone here says' indicates that someone "on the scene" decides on the rules of transaction, in particular, the amount of money needed. It is part of our understanding of 'money-1' that when using money to get something to happen as one wants, one typically understands that 'before I do it, I have to know how much, this someone here can say it to me'. See section [e] of explication [A].

g. because this someone thinks like this, they do something with money-1 as people often do when they think like this

h. after this, this someone does something with this thing, as they want

a short time after this, this thing is not in this place anymore, it is somewhere else

Three further points should be noted. First, the explication will work for buying something while shopping, or buying tickets, or buying a sandwich for lunch, even though in such situations the goods, ticket, sandwich, etc., do not previously belong to the person who takes the money. Second, the Prototypical Scenario includes various additional details (e.g. being in a place where there are other people, the involvement of another person in this place, using one's own money), but none of these details is obligatory. The explication remains applicable to buying something online, to buying something from a vending machine, to buying something on behalf of someone else, etc.

3.2. Explicating 'sell'

This is an opportune time to observe, with Levin and Rappaport Hovav (2005: 20), that despite the emphasis in the syntax literature on the converse-like relationship of 'buy' and 'sell': "There are certain happenings that can be described using one verb, but not the other". They point out although a sentence like *Chris bought a pack of cigarettes from the vending machine in the hall* is perfectly normal, it is not possible to describe the same event using the verb 'sell'. They also note that, cross-linguistically, words for 'sell' are sometimes derived from 'buy', but not vice versa, e.g. German *kaufen*, *verkaufen*; Lakhota *ophéthų* 'buy', *liyópheya* 'sell'; Tagalog *bili* 'buy'; *mag-bili* 'sell' (Van Valin 1999: 387—388). They conclude: "Jointly these facts about *buy* and *sell* indicate that *buying* is in some sense more basic than *selling* and that *buy*'s meaning is perhaps properly contained in *sell*'s."

We agree with this conclusion. The meaning of 'sell', to which we now turn, is indeed closely related to that of 'buy', but the relationship cannot be adequately captured by any statement about a switch in argument structure.

On our analysis, the explication of 'sell' has the same two-part structure as 'buy', but the overall meaning of 'sell' is more "transactional" than that of 'buy'. The differences start as early as line (a), in the 'What Happens' section, where it is stated not only that the main actor (the seller) 'did something', but that they 'did something with someone else' (as people often do when they do something with money-1 [m])'. That is, with 'sell' there are two co-participants on stage from the beginning: the seller and someone else; and, furthermore, in line (c), the change of ownership of the item is given in relation to both participants: i.e., before it belonged to the seller, afterwards it was 'not this someone's anymore, it was this other someone's'.

As for the Prototypical Scenario, it too involves two participants, beginning with an exchange of speech acts. In component (e), the main actor offers the other person the opportunity to buy the item (saying, prototypically: "you can buy [m] this thing now") and stating the desired price ("I want this much money"). The response, in (f), confirms that "I want to buy [m] it, I want it to be as you say". The scenario concludes (g) with the participants acting accordingly.

[D] *Mary sold something (her bike) today (for $250).*

WHAT HAPPENED

    a. this someone (Mary) did something with someone else today
        as people often do when they do something with money-1 [m]
    b. something happened to something (a bike) because of it
    c. before it happened, this thing was this someone's (Mary's), afterwards it was not this someone's (Mary's) anymore, it was this other someone's

PROTOTYPICAL SCENARIO

    d. often when someone does this, it is like this:
    e. this someone says to someone else:
        "you can buy [m] this thing now
        I say: I want this much money (e.g. $250)"
    f. after this, this other someone says: "I want to buy it, I want it to be as you say"
    g. after this, they do something with money-1

Two further remarks follow. First, as with the previous explication, the occurrence of 'money-1' in the first and last components does not entail that the transaction is necessarily done using money-1. The idea is rather that doing things with money-1 is a conceptual reference point for 'selling' (as it is with 'buying'). Second, the exchange of speech-acts modelled in the prototypical scenario corresponds closely to what would be called "offer" and "acceptance" in conventional terminology.

3.3. Explicating 'pay'

The verb 'pay' is important both in its own right and also because it is needed as a semantic molecule in explications of numerous other concepts, such as 'wages', 'taxes', 'fees', 'fines'. Below we give explications for two different grammatical frames involving 'pay'. Notably, both explications use the 'have money-2' construction. Compared with 'buy' and 'sell', they are more focussed on the transfer of money.

In [E1] we explicate the use of 'pay' with an amount of money in the object (post-verbal) position and a purchased item given in a *for*-phrase. The content of lines (a)–(c) will be familiar by now. The novel components are in (d), which introduces a particular way of thinking about the event. The "before-after" structure is reminiscent of a similar structure in the explication for 'sell', but here is the focus

is on the fact that before the transaction one party (the payer) had 'more money' ($80 more) and afterwards 'someone else' had more money ($80 more). [12]

[E1] *John paid-1 $80 for it (a shirt).*
    a. this someone (John) did something
        as people often do when they do something with money-1 [m]
    b. this someone did it because he wanted to buy [m] something (a shirt)
    c. when this someone did it, something happened because of it
    d. people could think about it like this:
        "before this happened, this someone had more money
          ($80 more)
        after it happened, someone else had more money
          ($80 more)"

As a small point of detail, the wording of line (b) allows for the situation in which John paid for the shirt but never received it. [13]

The sentence explicated in [E2] is different in two ways. First, it has a 'payee' person as an indirect object and this is reflected in the inclusion, in line (a), of the phrase 'with someone else'. Second, it is not about buying something but rather about paying someone to do something, as stated in line (b). The remaining components in (c) and (d) are the same as in [E1].

[E2] *John paid-2 Mary $50 (for mowing the lawn).*
    a. this someone (John) did something with someone else (Mary)
        as people often do when they do something with money-1 [m]
    b. this someone did it because he wanted this someone else to do something
    c. when this someone did it, something happened because of it
    d. people could think about it like this:
        before this happened, this someone had more money
          ($50 more)
        after it happened, this someone else (Mary) had more money
          ($50 more)

The two explications do not exhaust the grammatical versatility of the verb 'pay'. For example, there is a third frame which takes a complex lexical item (such as 'fine', 'taxes', 'fee', 'bribe', etc.) as direct object, e.g., 'Mary paid her library fine/taxes'. We prefer to avoid this frame here, since to deal with it adequately would mean unpacking the lexical semantics of the nouns.

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[12] As a point of clarification, the NSM metalanguage includes the semantic prime MORE, but there is no converse element 'less'; for discussion, see Wierzbicka (1996: 76–78).

[13] A related sentence pattern with 'pay-1' focusses on a place, e.g. 'Where do I pay?', 'Pay at the counter'. We will not explicate such sentences here, but they presumably depend on the fact that the prototypical scenario for buying involves money changing hands, which in turn implies a specific place and time; see explication [C].

3.4. Explicating 'it costs'

Finally, we present explications for the verb '(it) costs', in two grammatical frames. For reasons of space, we will provide only minimal discussion. The main points of interest are that, on our analysis, 'pay' is a semantic molecule in both the explicated frames for 'costs', and in the first frame, so too is 'buy'. The verb 'costs' is unusual from a syntactic-semantic point of view, in that it re-packages information about how much someone has to pay (the price) for something as information about that something.

Paralleling [E1] in this regard, in the [F1] frame 'it costs' says how much money one has to pay to 'buy' something. In the [F2] frame it says how much money one has to 'pay' in order to do something. The verb has a quasi-objective or factual quality, modelled in the explication by the initial 'it is like this' component and by the final 'people can know that it is like this'. [14]

[F1] *It (= this thing) costs $5.50.*
 a. it is like this:
 b. if someone wants to buy [m] this thing, they can't not pay [m] this
   much: $5.50
 c. people can know that it is like this

[F2] *It costs $500 (to do it), e.g., to fly to Sydney.*
 a. it is like this:
 b. if someone wants to do this, they can't not pay [m] this much: $500
 c. people can know that it is like this

4. Discussion

4.1. Conceptual dependencies in the lexicon of "money words"

From a general theoretical point of view, the analysis presented in this study demonstrates the architecture of the NSM model of lexical-conceptual complexity, i.e., the way in which conceptual complexity is built up by way of nestings of molecules within molecules. The study also demonstrates how chains of conceptual dependency can be established, in a non-arbitrary fashion, by disciplined NSM semantic analysis. For example, we have seen that among the "money verbs", the most basic is 'buy' and that it functions as a semantic molecule in the explications for 'sell' and 'pay-1'. Both 'sell' and 'pay-1' can therefore be regarded as conceptually dependent, in part, upon 'buy'. After 'buy', it appears that 'pay-1' is the next most important verbal molecule, not only in explications for 'costs', but presumably in the explications of various "money nouns", such as 'wages', 'fine', 'taxes', 'fee', and 'bribe', not considered here.

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[14] In these respects, the verb 'costs' seems similar to 'weighs', in sentences like 'It weighs 100 kilos'. If there is a postverbal NP identifying a specific person, e.g., *Lunch costs me $15 every day*, *It cost Mary $5.50 to get to work by bus*, the first line of (b) begins with 'when' rather than 'if', and the specific person appears in the place of 'someone'.

Much future work will be needed to explore and map out the architecture and chains of conceptual dependency within the sprawling domain of "money words". See Table 1 for a partial tabulation. As indicated by the number of starred expressions in this Table, we have only just scratched the surface.

> *money | coins, notes, cash, change | dollar, cent, pound, currency | *buy, *pay, *sell, *cost, spend, charge, afford | bank, cheque, credit, credit card, on credit, deposit, withdrawal | *have money, make money, lose money, save money, savings | customer, vendor | stingy, miser, spendthrift | owe, loan, IOU, debt, in debt, interest | profit, employee, staff, consumers | price, fare, bill, toll, discount, on sale, bargain, refund, free (of charge), freebie | receipt, invoice | cheap, expensive | bargaining, haggling | advertising, marketing, sale, auction | rent, hire, bond, deposit, down payment, mortgage | fine, fee, taxes | wages, salary, pension | reparations, damages, compensation | income, expenditure, revenue, royalties, commission | shop, shopping, store, supermarket | market, market place | goods, retail, wholesale, merchandise, products, services | fund, invest, stocks, shares, bonds, securities, capital | trade, tariff, levy | bet, wager, gambling | bribe, bribery, kickback, extortion, blackmail, ransom, embezzlement, fraud, scam, counterfeit | subsidy, donation, scholarship, grant, allowance, alms | inflation, recession, exchange rate, interest rate | accountant, treasurer, audit, bankrupt, insolvent | welfare, superannuation, insurance | company, business(es), corporation (corporate), entrepreneur, monopoly | commerce (commercial) | finance, financial (gain, support, etc.); fiscal (policy) | *the economy, economist, economic (growth, reforms, relationship, etc.*

Table 1: Partial grouped listing of "money words" and related expressions in English
(*= explicated in this or previous studies)

The foundational semantic molecule of the entire domain is, of course, 'money'. In itself, this observation is hardly surprising. What is surprising, it seems to us, is the semantic complexity of the 'money' concept itself and the way in which it turns out to harbour so many assumptions and presuppositions that are subsequently inherited or propagated across the entire "money lexicon".

In view of these considerations, it should be plain that conventional linguistic treatments of "economic transaction verbs" that simply use MONEY, or some other proxy term, as an unanalysed element fall far short of conceptual and explanatory adequacy.

4.2. 'Money' in everyday economic thinking

Stepping away from linguistics in the narrow sense, we would like to think that the conceptual-semantic analyses conducted in this study can contribute to an improved understanding of everyday economic thinking and of everyday discourse about economic matters.

In today's world there is scarcely any aspect of everyday life which is not touched in some way by "economic realities" and, accordingly, any discussion or thinking about people's lives and "life worlds" (to borrow a phrase from Habermas) is almost inescapably tied up with words and concepts about money. [15] People need to keep track of their money and, if possible, make wise decisions and plan for the future. They need to understand and, if possible, have some control over matters such as their debts and savings, taxation, mortgages, and planning for retirement. Children need to learn basic concepts and skills of money management. And all the time, the public space is saturated by politically contested discourse about the 'economy' (Goddard & Sadow 2021). It is perhaps no exaggeration to say that 'money' is the paramount "cultural artefact" of contemporary life.

Though we cannot pursue the matter here, it is arguable that a good deal of everyday economic thinking is naïve and not "fit for purpose", based as it is on the everyday concept of 'money-1', as explicated in this paper. Theoreticians in economics, sociology, anthropology, and ethics have repeatedly emphasised the human and social dimensions of money — asserting that money depends on "social relations", or on "trust", or on "power", making it a historically and culturally contingent construct rather than a self-standing objective reality (cf. overviews in Ingham 2004, Gilbert 2005, Mauer 2006, Mellor 2010, Graeber 2011, Smith & Wilson 2019). Nevertheless, it seems indisputable that such considerations have hardly any impact on the way most people think about money, most of the time. Even economists spend most of their time modelling the economy in quantitative terms – accepting, rather than questioning, the hidden assumptions and human dimensions behind the "money system".

4.3. Humanonics and NSM

Here we want to acknowledge the important new project known as Humanomics (Smith & Wilson 2019), which sets out to re-think "economics through the lens of the humanities and humanity through the lens of economics" (Humanonics website, Chapman University). It aims at rehumanising economics by emphasising the central role of people, their feelings, and their wants, in all kinds of human transactions.

A new body of interdisciplinary work in this field applies the NSM methodology to unpacking the principles of economics as theorised by Adam Smith (1776) in his foundational treatise *The Wealth of Nations* (Wilson & Farese In press a, in press b). Not only does this allow the moral and ethical (humanistic) aspects of Adam Smith's thinking to be re-discovered, it also – by virtue of the lexical simplicity and cross-translatability of the NSM primes – opens the way to making some of the fundamentals ideas of economic thinking accessible to non-experts all over the world. There are many remarkable correspondences between Adam

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[15] This observation applies not only to the plain or literal uses of "money words" and "money concepts", as studied in this paper, but also to their extended, figurative and metaphorical uses, which are equally worthy of study (cf. Mooney 2018, Tomoni 2012).

Smith's thinking and the semantic-conceptual analysis presented in this paper (Farese & Wilson Forthcoming).

Smith's (1776: Ch 4) discussion of money builds on the notion, discussed in his Plan of Work, that people want to have things of two kinds: "necessaries" – things people can't do without if they want to live well, e.g., water, – and "conveniences" – things people want because having these things makes them feel good, e.g., jewels, cars. Since people cannot obtain all the different things they want as products of their own work, they sometimes need to be somewhere with other people in order to exchange things which they have for other things which other people have. The universal instrument of exchanging things is money, and the 'market', in its primary physical meaning, is the prototypical place of sociality where individual needs and wants can be satisfied. Farese and Wilson's (forthcoming) analysis shows that certain concepts recur consistently in Smith's (1776) treatise and, significantly, that these correspond exactly to many NSM primes, specifically: PEOPLE, SOMETHING~THING, KIND, PLACE, BE SOMEWHERE, DO (something with other people), SAY (in transactions), FEEL, and of course, WANT and (BE) MINE. By emphasising the salience of human feelings and human sociality in economic transactions, Smith put people at the centre of economic thinking. His view of economics as simultaneously the science of the individual (someone who wants to satisfy his or her needs) and the social (people doing things with other people) is in sharp contrast with prevailing utilitarian views of economics.

The explications for three kinds of economic transactions – 'buying', 'selling' and 'paying' – presented in this study illustrate the effectiveness of the NSM toolkit when applied to economic concepts.

5. Concluding remarks

It is interesting to reflect on the future of money and "money concepts" in the coming years and decades. Many prosperous countries are becoming increasingly "cashless", a trend intensified by the coronavirus pandemic that officially started in 2020. Even in these countries, however, physical, concrete 'money-1' continues to exist and to circulate, and the economic landscape is still populated with visual and virtual symbols of notes and coins. Similarly, digital crypto-currencies such as Bitcoin have no physical form, yet the nomenclature and symbolisation is still parasitic upon traditional money words and symbols. [Note [16]] One wonders how long this leveraging on the past can continue and what manner of conceptual overhaul may lie ahead, especially in view of the global climate crisis which will dominate coming decades. More than ever, we think, the world needs clear, explicit and translatable ways to speak about "money matters" in human terms.

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[16] Crypto-currencies depend on distributed digital record-keeping (blockchain) and are not reliant on the laws and authorities of individual countries. Even so, a websearch for Bitcoin (BTC), Ethereum (ETH), Litecoin will show coin-like images and symbols, such as ₿ and Ł, analogous to those used with traditional money.

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