

# On realism, on its effect on natural language and their combined effect on creating Abstract Objects

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## Abstract

This paper has to say a little about realism, and a bit more about its effect on language. but its main intention, is to present a process that explains how humans create abstract objects.

The theory bellow, will demonstrate that the nature of abstract forms (such as numbers, or other adjectives such as *beauty*) is very different than the common known explanations, which suggests that its abstractness depends on whether it exists , or that abstract is the opposite of *concrete*, for example a belief that *beauty* is abstract because it isn't real, while a *beautiful woman* is real.

In contrast to this explanation, I will demonstrate that what makes a form an abstract form is independent of how that form relates to reality but rather how the part of speech that was used to express it relates to reality, abstract isn't a feature of numbers or beauty, its about sentences and nouns.

Drilling into how sentences and nouns interact with reality, might result in the common practice that nouns tend to represent objects in reality , and sentences represent thoughts upon objects, I will later on claim that this belief results from a higher level perception of all humans, which is known as *realism*. however, this practice (that nouns represent objects and sentences represent thoughts) is problematic.

Nouns, as will be demonstrated, have desired properties which sentences lack, and, due to the "belief" stated above, it's complicated to exploit these virtues when it comes to thoughts, as they are expected to be expressed in sentences.

The following paper will demonstrate that an abstract form is a *subjective opinion wrapped up in a linguistic form that resemble a noun*, and in practice is an alternative form to a sentence. This practice is essentially a *workaround* that solves the problem which was forced open us humans due to are realistic perception of reality and its effect on language.

## Preface

Past work on this topic focuses on Abstract Objects, (though I prefer the naming forms) and is summarized In here (quote) , A major claim that is constantly brought up is the distinction between Abstract Objects vs Concrete objects, which also serves at some extent as ways to try to define what makes an object, an Abstract Object. Among these efforts the “Non-Spatiality Criterion” and “The Causal Inefficacy Criterion”(site) were suggested, which can interpreted as a property that describes how it relates to reality. Two other finding that might result from this type of explanation will likely to relate abstract forms to mathematics or to generalization (a belief that 2 is more general than 2 specific apples, and in general, a belief that abstract forms describe groups)

Indeed, I think that my theory gives a clearer way to classify a form as abstract, but there is yet another important reasoning to my rejection from the current explanation. The concrete /abstract distinction does not explain two highly important questions that still remain mysterious:

***Why do abstract forms play such useful and important role in our lives even if they resemble entities that do not exist?***

Abstract forms have played for years crucial rolls in both ordinary life’s and also in a larger extent in life’s of professionals, especially in domains that makes extensive use of math, such as engineering and statistics, for their practitioners mathematical objects are far from fairy tails.

Notice here that I emphasis that abstract forms play a dominate role in professionals life. Generally, people learned to use them in an academic institute, and in many cases report that these studies where rough, people find these topics highly unintuitive which leads me to another topic that I believe my theory can handle:

***What is exactly in abstract forms that makes them so hard to grasp and use?***

Indeed it is possible to claim that the reason for the difficultly is tied to the fact that people find it hard to imagine objects they cant visualize, but here my main criticism lies in the fact that this kind of explanation do not offer any ways for students to ease this difficulty.

The theory bellow will present a methodology that can both answer these questions, and explains why people relate abstract form to imagination, to generalization or to math and would also involve several examples.

## On the great virtues of the noun

When creating a proper syntactic sentence, the noun has a role that can resemble a building block on which complex linguistic structures are based, such as verbs and adjectives. Following is a list of features that nouns possess, these features combined makes the noun a powerful tool, these features, or shall I say virtues results mainly from the strong assertion of nouns as words that represent real objects.

A Noun is:

1. **Believed to express a real thing in reality:** in many cases a noun is believed to represent a single object, or several objects, that exists in reality , this claim is followed by another claim, that this relation goes the other way around, and expressing some thing as a noun implies that it really exists.
2. **It has a short form, that is believed to be bounded** nouns have a tendency of being short, and in many cases when they are long, they are shortened by abbreviation, also nouns, just like objects, are believed to have a clear boundary that separates them from the words that surrounds them.
3. **The representation of the noun in reality is believed to be indifferent to its form** A form that represent that noun has no affect on its representation, and is chosen in an arbitrary manner ( a cat wouldn't be affected if ill change its naming from *cat* to *gat*). This feature further enables another desired feature "*ease of translation*", its relatively easy to translate nouns from one language to another, since the form itself is arbitrary and not language related. Again, this indifference results from the natural assertion of the noun to reality, as a key knowledge of reality is that its indifferent to what people say about it.
4. **Highly used in dictionaries (and in some extent encyclopedia)** the features stated above all contribute to the fact that dictionaries make extensive use of nouns. Dictionaries have a structure of a collection of noun and meaning pairs. A noun that is presented in a well known dictionary will establish the feeling that its meaning is well established as well, and usually reflects a convention by many individuals. The use of dictionary, allows another important benefit, it allows several people, such as researchers to independently study the meaning of that noun, or things that are related to it, for example, two researchers can run independent study on lions, and add at separate times results of their study to the same entry to that noun within the encyclopedia.
5. **It has a standalone form** Forms like adjectives or verbs require nouns to be binded to them whenever they are expressed within a sentence, and

this gives a sentence with nouns a feeling that it can be represented as a form of function and argument ( “*x was here yesterday*”, “*x is smart*”,...)

Before ill state the next benefit of a noun, ill start to roll an explanation that will be elaborated further on in the following sections, regarding an essential step required, when creating sentences. Sentences require additional effort apart from being a collection of words, they require *intent*\* which is an action that is intended to make the sentence feel more realistic for an individual or to his surrounding. A good example of intent, is when a person express a sentence and along side the expression he will imagine in his mind descriptive images of what that sentence represent, that gives the sentence the feeling that its real.

*\*In order to makes thing easy, from now on ill refer to intent as an action that takes place in a context of sentences, even though it could be expressed in other context as well.*

6. **The ease of Intention** when using sentences that have both nouns, and other speech components, the focus of the intention will be the other Non noun language components .And whenever a noun is in use within the context of the sentence, the user of that noun can significantly lose his intention regarding what that noun means relaxing the need for additional effort (like creating descriptive images in his mind), For example, when I’m expressing , “*lions are fierce animals*” my intention will focus on imagining fierceness of animals and binding it to lions, but will not focus on the meaning of lions.

All these virtues, and especially the ease of intention, makes it easy to create what I like to call anonymous sentence, a sentence where the nouns are replaced by some place holder / variable, for example “*X is fat*” , “*X is on top of Y*”.

This Summery serves as an introduction for another form that also tries to make use of these virtues, sentence, which are our main tool for expressing thoughts which are believed to be either true or false.

## What sentences are made of

When it comes to understand how abstract forms are created its important to analyze first their competitors, sentences, and specifically focusing on a major drawback they possess, their requirement for intention. To better understand this deficit its best to see a sentence as comprised out of 3 components, a *thought* associated at some way to an *object* warped together with *intent*.

The simplest form of a sentence that highlights this decomposition is of the form : “*Sam is ugly*”, “*lions are scary*” ( as opposed to “*lions are brown*” which is probably an indication for more objective situation). It has a component that’s related to an object, that is a noun (“*Sam*”), a component that relates to a belief regarding that noun (“*ugly*”) and it has another vague component “*is*” that I urge to be related to the last necessary ingredient of a sentence, the “intent” component. At some extent all forms of sentences have a structure that tries to capture these 3 elements.

So how does intent takes place and why is is so important?

Intent is an action that takes place along the technical expression of a sentence, and its requirement is that it will give the sentence (an expression that is targeted towards thoughts) looks and feels of describing a real thing, as it would have describing a real object. In general, intent is a collection of words, notations, imaginations and actions that a person who express a sentence carries out to himself or to others in order to highlight that the thought that the is expressing has a similar nature to the noun he is using within it, meaning that the sentence is part of reality. I believe that this effort is a prerequisite in order to make the sentence a true sentence, Truth is usually enabled in reality not in our imagination.

Following are examples of how intent can take place:

1. ***This, that: “This ball is red”, “That tree it tall” ( while pointing them out to others in reality)***, these are probably the simplest examples of what I refer to as intent in sentences, words (along with actions) that highlights to the surrounding that I am talking about reality by pointing out to specific objects.
2. **Capital letters / dots** Unlike nouns, sentences have designated notations that are intended to give them looks an feels of nouns, and nouns as was explained previously have a feature of being bounded from their surrounding, capital letters and dots ,as tools for highlighting the sentence from its surrounding, are a good example of some extra effort required to make sure that the sentence has a nounish looks, hence it feels real.
3. **Imaginary images** Just as described at previous sections, intent could

be implemented in some imaginary description in ones mind of what that sentence feel. A good example are sentences that includes verbs, as they could be images of some movement accruing over time.

4. **the word “*is*”** At first glance, *is* sounds like the most unnecessary component within a sentence, why is it so hard to express sentences (especially with adjectives) without it? My answer to that, is that *is*, the intent component, is there to express that the user wants to convince that the thought component within the sentence has a similar nature to the noun component, they are both describing real things. *Is* can be interpreted as some sort of equality and within a sentence the most important equality, is that the nature of the noun will be equivalent to the nature of the thought.
5. **highlighting word** Highlighting the beginning and ending of a sentence, can give a similar bounding effect, as described in 2. Another example which applied in Hebrew (And in some extent in English) is a case where the “*is*” component is neglected when a sentence is highly highlighted ( “*Dans smart!!*”) my intuition for this type of intention, is that highlighting implies that the information within the sentence has deeply affected the creator of the sentence, only things that happen in reality can really get to your mind.
6. **The noun itself** True that the noun, also has a informative role, but apart from that it has a role of helping on caring out the intention of the sentence, a good example of a sentence that uses a noun just for intent is an anonymous sentence, in such a sentence the variable plays only as a utility that enables intent “*X is smart*”, is a sentence, but “*is smart*” isn’t.

The need for extra effort, due to intent, makes sentences highly demanding forms to express, a good demonstration of that is some difficulty humans have in creating conjunctions for sentences, it is hard to describe relations between sentences, harder than describing relations of two nouns within a sentence.

The reason for that results from the fact that sentences focus on the subjective world, since the counterpart world, I.e. the objective world, does not need any words to become apparent, it had has every human sense. Within senses we can include vision, sound, smell and feeling to do that, which are all believed to be far more powerful than words. We use words, when the objective world is out of reach for the speaker, his surrounding and in cases when the speaker isn’t even referring to the objective world, but to whats in his mind, and we use sentences in order to emphasize that the words we express are referring to reality, a task which is executed by a sentence using intention, which in one hand allows the thought to become real but doing so leave no room to achieve other goals, especially when it comes to using the resulted sentence within yet

another demanding follow up sentence, a difficulty which will be described in the following section.

## **Intent is about being stating real sentences, not True sentences**

Intent isn't about convincing the surrounding whether the sentence is a True sentence, but rather to give a realistic feeling, for example when stating that "Dan is smart" I'm clearly suggests that this sentence deals with reality even though Dan might turn out to be a complete idiot. Further more, I claim that fictitious stories that are bundled into a sentences will give the feeling that they deal with reality , since this is the exact feeling sentences are intended to achieve.

A good example of this distinction that involves using logical operators ( "or" , "and",..) can be seen in a sentence of the form *"Dan is both smart and interesting"* , in this kind of sentence, the elements that required to relate it to reality ("Dan is"), stay the same, but another component ( *"and interesting"* ) that is added to a simple form of a sentence ads complexity to the final *"thruthness"* of that sentence. This is added, easily without any effort. On the other hand notice the following phrase that might be true though sounds weird: *"I love eating humus and united states is independent since 1776"*, true that a possible explanation for the weird feeling comes from our desire to talk in context, but this kind of weird conjunction, has a deeper root – the difficulty to create two different intentions both at the same time

The last element that fuels the cycle of nouns, sentences and intent, is our realist perception of the world, which relates true statements to reality, hence forcing the forms that are intended to eventually express the truth to become tools that as a start convince the surrounding that they properly represent reality.

Realism comes in cost, lets explore in depth, what exactly we are paying to keep it.

## Sentences dream of becoming nouns

When ever there's use of a sentence, one would want to have the same capabilities as nouns allow, a great example of this is a case where one expresses a thought (using a sentence) which he will want for a start to condense into a short form, later on be used in yet other sentence and even embed it into a dictionary. unfortunately this capability isn't so easy when it comes to sentences, as they require intent. Lets illustrate this difficulty in the following (hopefully amusing) example.

I would like to express my opinion regarding *Sam*, a well known man. My opinion contrast against the convention that Sam is a fine looking human being, while I think as him as an ugly person, further more, I believe that my thought is ground breaking, and in the future people would recognize my vision and how looking forward it was. As a starting point I express my though to any one that is willing to here me that *Sam is ugly*, it seems to work, people are listing to my ideas. Now its time to leverage this success.

A good indicator of my success, will be that other investigators will use this discovery for further investigation, and even better, it could be shown up as a new entry in Wikipedia, where a huge gratitude towards my thought would be shown.

So how will the Wiki editor will express that my idea was a breakthrough, he will probably write some thing like, '*Sam's ugliness was a tipping point in perception of beauty*', witch could also embedded in a encyclopedia as *Sam's ugliness*".

Why did the editor change the original format of my thought from *Sam is ugly* to *Sams ugliness*? why cant he just say that *Sam is ugly was a tipping point in perception of beauty* leaving my original sentence in its original form?

An initial explanation for the conversion is that by stating that '*Sam's ugliness was...*' the editor confirms he is agreeing with the statement, however if he wanted to do that he would just have said "*Sam is indeed Ugly*", on the other hand, if he wanted to show his approval as a side note he would have expressed *Sam the ugly was ...*" , my claim is that this transformation has a completely different nature, the need to create a follow up sentence on top of the original sentence, and In order to achieve that , he had to dress it into a form of a noun, which enabled him to use all the virtues of the noun, while avoiding the need to intent the original sentence. Doing so, our editor needs to create an abstract form, which technically can be seen as a transformation of a sentence into a Fraise.

The need to intent a sentence, in-order to make it feel real is a major drawback, for one to further use that sentence in a follow up sentence, since the action of intention is demanding and require concentration, and do not allow the user to



focus his intention on the higher level sentence.

## On realism and solipsism

The need to make further use of the sentence, requires for non standard actions, even ones that will neglect our need to express real thoughts, a typical situation is where the need to express sentences over thoughts is more important than to understand how these thoughts relate to reality

Such a move is creating an abstract form, an action that suppresses the root cause of our need for intention – our realism perception, this is done through creating in our mind, for a short period of time (the very same time we need to use our original sentence ) a counter-factual reality where objects depends on thought, not for philosophical amusement like a solipsist, but rather for a practical reason, a need to create a robust, lightweight ,and non demanding from that can express content that is usually embedded within a sentence, but looks like a noun, to be further used within another higher level sentence, which in many cases is the real focus of interest. Unlike sentence intention where the user recruits reality that includes external effort to give it the nourish feeling, abstractness, the creation of abstract forms views reality as a second order citizen just under the privileged thoughts, hence deteriorating the original need to create that intention.

### Solipsism capability

Solipsism, as a well known philosophical idea is usually considered a hack. people stick to realism as the absolute truth, and don't really see solipsism other than a trick. Solipsism might be hack, but when it comes to creating abstract form its the working horse tool that creates it, a person that cant imagine reality as if the real world was Dependant on his thoughts wont be able to create abstract forms. Just one last remark to distinct between realism and solipsism, when it comes to creating abstract forms, the creator prefers to keep his realist belief and only uses solipsism for a very short period. Recall that its a belief that going against it would actually consider a person, an insane one. This is why In this context I refer to realism and solipsism as *realism belief* vs. *solipsism capability*.

The exploitation of solipsism for a short time give an understanding why people find it hard to understand and use abstract forms, since the analysis of the nature of abstract forms and how to use them, is usually conducted after the abstract creation has end, through the view of a realist, ill further elaborate on this topic later on.

Up until now I've given the reader all the required background to understand the processes , its time to demonstrate it, in several examples bellow.

## Examples

### the suffix - ness

*A native English suffix attached to adjectives and participles, forming abstract nouns denoting quality and state (and often, by extension, some thing exemplifying a quality or state): darkness; goodness; kindness; obligingness; preparedness. (from: <http://www.dictionary.com/browse/ness>)*

An easy way to understand the process of creating abstract forms, is by first creating a sentence, and then transitioning it into such a form, and as previously explained, the easiest sentence to start with is of the form “*x is y*”, where *y* represents a thought, usually as an adjective.

Lets return to our Sam example and see how solipsist capability kicks in. our abstract creator first express *Sam is ugly* , then for a short moment undermines his realist belief and embraces a solipsist alternative belief , for now the world of objects depends on thoughts, and the world of thoughts is the world of thruths.

At this point, the thought, “ugly” benefits the privilege and capabilities that used to belong to the noun, especially the ease of intent, for now the ugly component is playing the role that was previously saved to Sam. This solipsist point of view enables to transform it into *Sam’s ugliness*, a form which highlights that ugliness is the stand alone component, that Sam is dependent on. This transformation gives the benefit of becoming a building block in a new follow up sentence. In this new form, “Sams ugliness”, ugliness inherits the benefits of being a noun alike form, if the user want to talk about the ugliness that is related to Sam, he can keep doing so, but he doesn’t have to rely on that noun for the need of intention. For now the noun plays only the role of speaking about Sam, and the other role which it had in a sentence, that is to enable intent, becomes irrelevant, hence making it easy to drop out.

Adjectives that are transformed using the ness suffix are probably the most wide spread abstract forms people interact in their daily life’s, this results from the fact that they were generated from a sentence that all 3 ingredients (noun, thought and intention) are clear and separate, and its clear that the sentence represent a thought, but what about sentences that try to capture reality in an objective manner, for example *Dan ran*, clearly describing reality and not a thought?

For start, lets recall that a sentence will emerge, only in cases were reality haven’t made its full reach. If both viewers saw that Dan indeed ran, they wouldn’t bother saying anything, this is why I consider this sentence, or any other type of sentence as a thought.

With this point elaborated, it is evident that verbs aren't stand alone forms, and sentence with a verb is still hard to use within a follow up sentence, "Dan ran was impressive" just doesn't sounds right.

After elaborating that *Dan ran* is a thought that requires intent, its time to see how we can get rid of it, and "Dans run" which can be further used in *Dans run was impressive* does the job, again using the solipsism capability needed for the conversions, and just like before the noun (Dan) in the abstract from "Dans run" can easily be removed.

Before ill move on to the next example, ill start to leverage the explanations and example so far and explain why abstract forms are tied to other concepts such as generalization and nonexistence.

**Abstract vs Generalization and vs Non Existence** The conversion of the form "Sam's Ugliness" to just "Ugliness" is enabled through solipsism capability and creates the feeling that "Sam's ugliness" is a specific member of the group of ugly things. Although there is some logic in binding these concepts, I choose to refrain from this explanation for several reasons. First of all, the reason for creating the abstract from wasn't intended to remove the noun component, but to remove the intent component, Sam's Ugliness" is just as abstract as "Ugliness", Second of all, generalization is a far easier task than abstractation, there is no need to invoke any solipsism when grouping several objects such in "*this cat and that dog are both animals*", and for last, I don't think that groups (especially of objects) create any feeling of components that aren't part of reality.

Speaking of things that feel unreal, Abstract forms are created in a context which switches rolls between what is real and what is not, which results in a form that its probably impossible to tell whether it represents some thing in reality. its not the specific form that its realness isn't clear, its the whole environment that surrounds its creation that is problematic.

## Numbers

Going away from the simplest type of sentence, one that is composed of thoughts about nouns , is a slightly harder from of a sentence, one that is comprised from a noun and its properties. A good intuition of a property, is to see it as a type of description that is not essential to the existence of the object, and in some extent can bee seen as a point of view of that noun. When looking for an ideal sentence as a starting point to get to a native number (integers, 1 to 9), this kind of sentence satisfies the requirement.

Lets describe a sentence with a number as a property: *This apple is represented*

by one. In the context of a sentence “one” isn’t an abstract form, only some description of the apple, and only the conversion of the sentence into something like *representation of one, for a single apple* will convert one into an abstract form, now it makes it possible to make claims about the representation of an apple, like *this representation of one for a apple, is similar to that representation of one of an orange*, and again, since the orange and the apple aren’t essential for intention, and the representations are playing a role of stand alone components, its possible to convert this sentence into the well known mathematical notation  $1=1$ . This firsts example also serves as a quick introduction to why abstract forms are unintuitive, in many cases the new name of the converted sentence, is identical to either the description (“is one”) or the noun that was used in the sentence.

### **Different types of numbers correspond to different types of sentences**

When taking an imaginary walk in the number line, there seem to be “magic jumps”, like from 9 to 10, from positive to 0 and then to negative numbers, or from real to imaginary. Since abstract forms play a role as alternative forms to express sentences, I believe that the reason for these jumps is that they represent different types of sentences, for example sentences with verbs, or sentences with negation.

Negative number, as I believe, correspond to sentences with verbs, *A single apple was removed*, which can be transformed (along with dropping the noun) into the abstract form *removal of a one*, which is equivalent to the known notation “-1”, and just like in any other abstract forms, the need to express sentence on top of the abstract form (example: “A single number that is added to -1 is equal to 0”) is more important than the need to understand what -1 represents..

The number 0, as I believe, corresponds to sentences with negation, “A banana, is not a number”, which can be transformed into (along with dropping the noun) into the abstract form “not -ness of a number”, which is equivalent to the known notation “0”, and again, the creator of the abstract form should not worry at all regarding what does “not -ness of a number” represent, the main trade off that creating abstract form is to loss the capability of representation in exchange of gaining capability of using it in a follow up sentence.

Mathematics don’t exploit abstract forms just when it comes to numbers, solipsism capability has created many mathematical objects, lets explore one of them in the following example.

### **Multi dimensional object**

The combination of use of objects and their properties, together with solipsism capability reveals a pattern of new abstract forms that play common roll in

advanced mathematics. The pattern is conducted as following, at start a well known and simple object is introduces along with its properties,

In mathematics it is very common that objects with properties switch roles, and the property becomes the essence of that object.

For now let our standpoint sentence be of an existing object with properties: “a point is represented by both x and y labels” , indicating that the “both x any y labels” Frazee needs the point in order to be expressed in a sentence, again when solipsism capability kicks in the Frazee can be transformed into “x and y representation” which plays a role as a stand alone form, and just to further confuse is being changed to an identical name as was used before within the original sentence “point” indicating that this point and the abstract formed point are identical entities. Notice how math treats different point, and how ordinary people do, it sees it through a solipsist glasses, again along with an elegant invigoration of the nature of what does “x and y representation” really mean.

Another interesting object that is created is a similar way is the imagery number, also known as “i”, this object can be viewed as transforming the sentence “A square root was applied on minus 1” , into “applying square root on minus 1” (which is later converted into a shorted form of i)

## Why is it so hard to deal with abstract forms?

A common explanation of the difficulty to handle abstract forms ties the difficulty to the fact that they are hard to grasp, many abstract forms don't have a clear representation to what exactly they reflect in reality. This specific explanation should be first elaborated: its not that abstract forms are imaginary or real its that the processes that is used to create them makes reality and imagination mixed up.

This initial explanation has indeed some impact, but there are yet other two explanations, the first, which I think that plays a minor role, is that creating abstract forms requires one to go near the madness zone, a zone that undermines a very fundamental belief of how we belief reality is constructed, but the other explanation, which plays a major role, is that abstract forms wear two hats, one of an image that would normally be described as a sentence, and the other hand make looks and feels of a noun, making it hard to understand how to use it. This specific difficulty can be elaborated through an use case I personally encountered, while teaching statistics and probability, and specifically the nature of a random variable ( usually normally distributed random variable).

A reasonable explanation of a random variable, for example "The salary of an American employee", can be explained in within a framework of a sentence:

*There is 10 percent chance of being 4000 dollars or 20 percent of being 5000 dollars , or . . . . .*, but a student will usually encounter it in a label that usually represent a noun line X, or the well visual of a random variable as surface (like the famous bell curve surface), which is also an object that is usually reflected as a noun.

Dual entities as such, are every where in math, whether its random variables, multi dimensional objects, limits , derivatives, or imaginary numbers, a math student will constantly deal with entities that are treated in class an nouns, but reflect situations that should be pronounced in sentences, and this difficulty I believe, is a major draw back for students approaching studies that make extensive use of abstract forms. Further more, what makes thinks even harder is that both the abstract from and the non that was used to create the sentence, before it was transformed, get the same names, as in point an the "one" number.

Hopefully understanding this difference may help in teaching these studies to new students.