

## CONCEPT ACQUISITION : SOME REFLECTIONS

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My aim in this article is to consider the following question : (1) What conditions must be fulfilled for any individual, say *S*, to have the concept of *Z* ? And (2) What role does a concept play in the transition process from one belief state to another? Belief states, in biological terms, are reentrant loops and have a natural disposition to pass to other belief states. When such transitions follow proper usage of concepts involved within these states, an inferential is instantiated.

This article is divided into two main sections. In section 1, I distinguish between a truth-conditional theory and operational theory of concepts and show why I adopt the latter instead of the former. According to the truth-conditional view, concepts are individuated by their inferential roles; according to the operational view, concepts are individuated by their everyday usage in natural language. In section 2, I critically survey the three models that are generally put forward to explain how we use rules that govern the use of concepts. These models are as follows: the intellectual model, the third person model, and the competence/action model. At the end of this section I review, very briefly, the subdoxastic status of the rules governing concept-usage.

### 1. Concepts : Logical Role vs. Role in Practical Reasoning

According to the truth-conditional view, as Millar observes, a concept is individuated by its inferential role.<sup>1</sup> Each concept, according to this view, is a component of a network. Patterns of legitimate inferences individuate concepts: Thus a subject, *S*, possesses the concept '*Z*', according to the truth-conditional view, only if *S*, has mastered the inferential patterns by which *Z* is individuated. According to this view, *S* possesses the concept of 'spinster', for example, only if *S* can make the following sort of inference: Linda is a spinster; therefore,

Linda is an unmarried female. *S* can also make the following inference regarding spinster: 'Linda is a spinster; therefore Linda owns several cats.'

The chief distinctions between these two inferences are as follows: (1) In the first inference 'spinster' is partly individuated by an analytic inference and in the second inference 'spinster' is partly individuated by a non-analytic inference. (2) While the first one is purely formal, the second one is not.<sup>2</sup> One possible objection to the above theory of concepts has been by Dummett's followers. The objection stems from Dummett's<sup>3</sup> 'Inextricability thesis' (*IT*)<sup>4</sup> Dummett, following Quine, says that one cannot make a strict distinction between concepts that are individuated by analytic inference and those that are not. Such distinction rests, as Dummett says, on the analytic-synthetic distinction which, as Quine has shown, is spurious. According to *IT*, convention and experience cannot be separated from each other as being determinants of our linguistic dispositions. Dummett says, "It is this thesis which underlies Quine's substitution of stimulus-analyticity for analyticity and of stimulus-synonymity for intuitive synonymity; it consists in the doctrine that no distinction is possible in principle between an analytic sentence generally recognized as such and any other sentence generally accepted as true."<sup>5</sup> According to *IT*, there is no reliable criteria by which we can distinguish between inferences which are purely analytic and those which are not. Millar claims, however, that the difference between these two sorts of inferences can be explained by using the notion of conceptual truth. Clearly, the first generates conceptual truth, says Millar; the second does not.<sup>6</sup>

Gareth Evans showed that the notion of conceptual truth is problematic.<sup>7</sup> For example, 'owning a cat' may be part of *T*'s concept of being a 'spinster', but it may not be part of *P*'s concept of a 'spinster'. Accordingly, the inference '*S* is a spinster; hence, *S* owns several cats' will generate a conceptual truth for *T* but not for *P*. The other point is that 'owning cats' was part of *P*'s concept of 'being a spinster' in the 1920s, but it is not so in the 1990's. So the inference '*S* is a spinster; hence, *S* owns several cats' generated a conceptual truth for *P* in 1920 but it does not do so for *P* now. Another good example is the concept of 'whale'. While 'being a mammal' was not part of *S*'s concept of 'whale' in 1920's, it is now a part of his concept. So the inference pattern '*X* is a whale, hence, *X* is a mammal' was non-analytic in the 1920's but is not so now. What this shows is that our concept acquisition has to take note of

two things; (1) that individual psychology is different and (2) the fact that language is not static but dynamic and that meaning constantly changes. So substantive features of concepts have to be accommodated in any reasoning.

Quine said that to generate 'conceptual truth' we need to consider only the formal features of a concept. If that is true then the only inferences allowed by Quine would be those in which the premises entail the conclusion.<sup>8</sup> For if we consider only the formal features of a concept, as suggested by Quine, a concept, in that case, is a reason for another concept only if the former *entails* the latter. In ordinary everyday reasoning, however, we have to take account of non-conclusive reasoning and Quine's thesis would be too narrow to apply in cases of such reasoning. Further, a premise can be a reason for a conclusion without entailing it.

In recent times Goodman has shown that we cannot consider only the formal feature of a concept.<sup>9</sup> For, Goodman argues, we cannot make a distinction, crucial to induction, between a "projectible"<sup>10</sup> and a "non-projectible" concept by appealing only to their formal features. Goodman's notion of "projectible concepts" arose from his solution to what he called the "new" problem of induction. He posed this problem by constructing artificial predicates like "grue" and "bleen". Goodman defined 'grue' as follows:

● *X is grue = def X is green and examined before the year 2000 or blue and examined afterwards.*

Similarly, Goodman defined 'bleen' as follows:

● *X is bleen = def X is blue and examined before the 2000 or green examined afterwards*

Suppose we observe all emeralds before the year 2000 and reach the conclusion that "all emeralds are green". By the same observation we can also reach the general conclusion "all emeralds are grue" (according to Goodman's definition). Both these generalizations seem quite reasonable. The problem, however, arises with the colour of emeralds examined after the year 2000. Suppose *E* is an emerald which will be examined by individuals after the year 2000. Now, we can say of *E* that it is green and also that it is blue (as everything green is by definition also grue) or not-green. Clearly, this is a self-contradiction.

As Pollock observes, the formal feature of the pairs 'blue' and 'green' and 'grue' and 'bleen' are symmetrical' but their substantive features are not. Hence, a distinction between projectibles and non-projectibles cannot be made by appealing to their formal features; we have to take note of their substantive features as well.<sup>11</sup>

The above theory of concept-acquisition, also known as the truth-conditional theory, is clearly problematic. I propose to replace the above theory of concept acquisition with the *Operational Theory of Concepts*. According to this theory, having a concept is an ability to use words, something other than themselves : knowing how to use a concept. *S*, for example, has the concept of *X* if, as Pollock says, *S* knows an *X* when he sees one.<sup>12</sup> According to the latter view, concepts are not only categories whose interrelationships are purely formal; they are also categories in terms of which we think of the world. Under what conditions does *S* have according to this theory, the concept of, say, a whale? *S* has the concept of a whale only when a set of conditions, say, *C*, that uniquely determine the justification condition of the concept of whale, is fulfilled. In contrast to this, *S* has the concept of an apple when a different set of condition, call it *C'*, is fulfilled. What are *C* and *C'*? *C* is the condition which being fulfilled enables *S* to know a whale when he sees one; *C'* is the condition which being fulfilled enables *S* to know an apple when he sees one.<sup>13</sup>

Let us see what an operational theory of concepts is by distinguishing between the truth-conditional role and the conceptual role of a concept.<sup>14</sup> The concept of whale plays a truth-conditional role in the inference, "Willy is a whale hence; Willy is a mammal". This role of the concept of whale makes it a mere logical category whose interrelationship to other concept (such as being a mammal) can be studied by logic that takes note only of the formal feature of a concept. We have seen in Goodman's case, however, that in all non-conclusive reasoning we have to take note of both the formal features of a concept and also their substantive features. Thus, we must take account of not only the truth-conditional role of a concept, but also its *conceptual role*. The concept of whale plays a *conceptual role* for *S* when *S* can apply it properly and can distinguish it from a non-whale (say shark or dolphin). As Pollock says, one knows a  $\phi$  when he can identify a  $\phi$  as a  $\phi$  and exclude it from its complement or non- $\phi$ .<sup>15</sup> *S* has, in this case, learned the rule of the usage of the concept of whales in natural language.<sup>16</sup>

Reasoning or Inference is a transition of one belief-state to another. In addition, such transition is not arbitrary but meaningful. Meaning in each case is provided by the rules of concept usage in each belief state; rules constitute the semantics of these states. Thus, the transition from  $S$ 's belief state that he sees an apple to his belief state that an apple is there instantiates an inferential pattern. One who has acquired that rule of concept usage has also acquired the conceptual roles of concepts in natural language. We have seen above that according to the truth conditional notion of concept acquisition, to have a concept of a *whale* is to be able to make certain inferential connection between whale and its ingredient component. For concepts, according to this view, are components of networks, and to grasp a concept is to grasp its network. For example, having a concept of whale is knowing some related propositions such as "whales are mammals". But any person, say  $S$ , must have the concept of whale in the sense of having acquired the conceptual roles of that concept before being able to articulate these contingent facts about whales. Let us suppose that  $S$  is a marine biologist and knows a lot of contingent facts about whales. Now,  $S$ , as Pollock observes, must have known a whale to be a whale before acquiring all these contingent facts, otherwise he would not know a whale when he is examining it.<sup>17</sup> This is the notion of concept that I am applying here.

While simple concepts (such as the concept of a whale) can be known by an individual *ostensively*<sup>18</sup>, complicated concepts can be known by him only if he knows their ingredient simple concepts. The term "ostensive", as used here, has a sense which is similar to its usage in ostensive definition. Suppose  $S$  wants to define the term 'cat'. One way he can do so is by pointing to a real cat and saying 'cat!'. Similarly, one can acquire other concepts by having an instance of the concept pointed out in the real world; we can say that he knows the *justification* condition of a cat. As Pollock says, "When you use an ostensive definition to teach a person a concept, what you are teaching him is how to judge whether something is an instance of that concept".<sup>19</sup> Complex concepts, on the other hand, cannot be learned ostensively. A mammal (concept of a kind), 'being taller than' (concept of being a relation), or the concept of 'being patriotic' (abstract concept) are examples of complex concepts. Complex concepts like that of a mammal is divisible into simpler concepts like 'being an animal' and 'suckling their young'. Once these simpler concepts are grasped, a child can build up complicated concepts. Suppose  $\omega$  is a complex concept; it

consists of the concepts of  $\phi$  and  $\psi$ . Then to know the justification condition of  $\omega$ , we must know the justification concept of  $\phi$  and  $\psi$ . As Pollock says,

One concept may be defined verbally in terms of some other concepts, and those concepts in turn defined in terms of some further concepts, and so on, but this cannot go on indefinitely. We cannot define *all* concepts verbally without going around in a circle. Our sequence of verbal definitions must eventually terminate with some concepts that can be defined ostensively. Furthermore, if the concept of a  $\phi$  is verbally defined in terms of some concepts  $\phi_1$  to  $\phi_n$ , which are in turn verbally defined in terms of some concepts  $\psi_1$  ...  $\psi_n$ , then by putting all of the definitions together we can obtain a definition of  $\psi$  in terms of  $\psi_1$  ...  $\psi_n$ . Consequently, if a concept can be defined by means of a sequence of verbal definitions which terminate ultimately with ostensive concepts, then it can be defined directly in terms of ostensive concepts. This means that there are in general two kinds of concepts those that can be defined ostensively, and those that can be defined verbally in terms of others ....<sup>20</sup>

One problem arises at this point. It might be the case, as Pollock says, that the justification condition of  $\omega$  consist of  $\phi$  and nobody knows whether it also can be defined in terms of  $\psi$ . As a result, Pollock says, under no conditions is  $S$  justified in thinking of something that it is  $\omega$ . Pollock says, "The justification conditions of the concept of a  $\omega$  constitute the null class. Under these circumstances, it would not be true that to know what a  $\omega$  is is to know how to determine whether something is a  $\omega$ . It seems that in this case, to know what a  $\omega$  is would be something like knowing the definition of a  $\omega$  and having the concepts involved in the definition. Thus we cannot conclude that the concept of a  $\omega$  is uniquely determined by the justification conditions of it and its complement"<sup>21</sup>.

The above theory of concepts have some problems. First of all, it may be objected that one can identify a whale as whale only if one knows the truth conditions of whale. To this objection we can reply as follows : that a truth conditional definition is not common among ordinary speakers of English, although it is possible that lexicographers might be able to construct it<sup>22</sup>.

Moreover, it can be argued that although a person can identify a whale without knowing what makes a whale a *whale*, he can do the identifying just

when the truth-conditions are satisfied; hence, knowing the truth-condition of a concept is a prerequisite for identifying it. The problem with this prerequisite is that it makes the conditions too stringent. Does *S*, who wrongly identifies a plastic whale as a whale, possess the concept of a whale? Does a child, who wrongly identifies a shark as a whale, possess the concept of the latter? It can be replied that owing to the similarity between the plastic whale and the real whale, *S* has applied the concept of whale to the plastic whale; this does not, however, preclude him from having the concept of whale in the above sense. In the second case, the child was perhaps not paying attention to what he was identifying and hence he did not identify the whale correctly; nonetheless, in this case, he had the concept of whale. Further, as I said before, concepts are dynamic entities and they are known within a frame of reference. Gradually the child learns that whales are things which cannot be displayed in toy shops, his original concept of whale changes; he knows now what frame of reference is unsuitable for whales. In general, having conceptual knowledge, *S* must *be able* to ascribe concepts. In all cases, when *S* can rightly judge and identify a whale as a whale, we can say that he has acquired the concept of whale. As Pollock remarks, "This is knowledge in the practical sense rather than theoretical knowledge. The child must *know how* to ascribe the concept to things justifiably, but he need not *know what* is required for his ascription of it to be justified".<sup>23</sup>

What is the meaning of a concept according to the above theory? According to the operational theory, the meaning of "whale" is determined by the rules of its usage. Hence, one who has learned the rules of "whale" - usage has also learned the meaning of whale in natural language. In this sense, rules of concept usage *constitute* the meaning of that concept; there is nothing deeper about meaning than this. In order to fully appreciate this theory, we have to understand two relevant questions : (1) How do we learn to use concepts in natural language? And (2) What does proper concept usage means? These are the questions that we consider in the next section.

## 2. Epistemic Rules and Their Function

I said in the previous section that proper concept-usages are instantiated in some cases of belief-transition; the latter cases illustrate our notion of inference, but the question remains, how are these rules used? Generally three models have been suggested in order to illustrate the rules of concept-usage.

These models are the Intellectual model, the Evaluative model and the Competence/Performance model.

According to the first model, rules of concept-usage are explicitly articulated propositions. A good example is a driver's manual. It tells us exactly what to do when we see a stop sign, a yield sign, or a flashing red light. When people first start driving and are not sure how to use these rules, they can always check the explicitly written regulation in the driving manual. This is propositional knowledge or knowledge that some thing is the case. According to the second model, rules are used to evaluate other people's behaviour. The problem with both these models is that neither of them shows how rules govern our speech or language. My contention is that the third model above is appropriate to describe how rules *actually* work in guiding our linguistic behaviour and actions.

Rules of driving, for example, govern our behaviour. We refer to manuals when we first learn how to drive. As an expert driver we do not *think* explicitly of these rules; nonetheless, our behaviour is guided by them. Driving is an ability or competence : it is a knowledge 'how'. The case of swimming is similar. When we first learn to swim, we follow the explicit instructions given to us by the instructor. As we become experts, however, our behaviour automatically conforms to the rules without our having to think of them. Pollock says that when we "..... undertake to do X, our behaviour is automatically channeled into that plan."<sup>24</sup> Our linguistic or conceptual abilities are similar to our ability to drive or swim; they constitute a description of this plan for swimming or driving, or speaking a language. Rules guide our behaviour; we can apply them, correct them, and refine them. We do not, however, always follow these rules correctly, but we TRY to do, as Pollock says, with varying degrees of success.<sup>25</sup>

To summarize what I have said above, there is a vast difference between knowing a rule in the sense of knowing some propositions and being *guided* by a rule. Thus, our ability (to swim or drive) consists in our behaviour being automatically channeled into following rules. The crucial thing here is that these rules are *internalized* by us -- we do not have to think of them when we perform the relevant action. This knowledge consists in doing things as the situation arises. Thus, *S*, for example, knows the concept of a, say, *Z* only if *S* knows a *Z* to be a *Z* when certain conditions are fulfilled : there is a *Z* in the environment. According to this theory, if the condition of there being a whale is fulfilled, *S*



retrieves the rules of concept usage (in this case it is the concept of whale) from his short-terms or occurrent memory and applies it in that particular case and concludes that it is an instance of whale. Memory, as I pointed out before, is not a data-bit storage of a computer which is static and unequivocal; it is biological and is dynamic. There is a phenomenal change in *S*'s experience as *S* recognizes the whale.

As Pollock observes,

Having procedural knowledge of what to do under various circumstances does not involve being able to give a general description of what we should do under those circumstances. This is the familiar observation that knowing how to ride a bicycle does not automatically enable one to write a treatise on bicycle riding. This is true for two different reasons. First, knowing how to ride a bicycle requires us to know what to do in each situation *as it arises*, but it does not require us to be able to say what we should do before the fact. Second, even when a situation has actually arisen, our knowing what to do in that situation need not be propositional knowledge. In the case of knowing that we should turn the handlebars to the right when bicycle leans to the right, it is plausible to suppose that most bicycle riders do have propositional knowledge of this; but consider - knowing how to hit a tennis ball with a tennis racket. I know what to do - as the situation unfolds, at each instant I know what to do -- but even at that instant I cannot give a description of what I should do. Knowing what to do is the same thing as knowing to do it, and that need not involve propositional knowledge.<sup>26</sup>

The important question now is, what constitutes the *justification* of these rules? *S*, for example, might use a concept guided by his rules, while *Y* might use the same concept differently guided by his rules, and both might argue that they have their own notion of which rules are appropriate. Are we not heading for a thorough relativism? One can, of course, justify these rules with reference to some other rules. The question, then, would be as follows : "What is the justification of the latter rules?" As Strawson observes when we have questioned so much that there are no more rules left by reference to which we can justify any rules, we have reached the limit of justification.<sup>27</sup> Following Feigl, we can draw a distinction between "validation" and "vindication" of rules.<sup>28</sup> As Salmon says, "A rule of inference can be validated by showing that it can be

derived from other accepted rules or principles. There is, however, a second form of justification called "vindication". This form of justification consists in showing that a given decision, policy, or act is well adapted to achieving a certain end".<sup>29</sup> Our aim is to achieve correct usage of ordinary discourse and to be able to communicate and make sense within our linguistic community. Hence, the rules we use should be the ones directed towards this end. Given any rule,  $r$ , of concept usage, it is *permissible* to use  $r$  if it is not forbidden to do so; in other words, it is permissible to use  $r$  if it contributes to sensible discourse which is true for all speakers. Here we justify  $r$  in relation to a norm or a standard - our ability to learn the use of concepts in ordinary discourse.

## 2.1 Rules as Subdoxastic

I close this article with a brief estimate of the nature of rules of concept-usage as being subdoxastic. What exactly, one may ask, is a subdoxastic state? The following example from grammatical rules will make the notion clear. Suppose that  $S$ , who is an adult and a competent speaker of English, is storing the grammatical rule that ' $s$ ' should be added with the verb following any third person singular noun. Let us call this grammatical rule  $r$ . Further, suppose that  $S$  believes  $r$  to be correct; we can say that  $S$  is in the belief state  $B_{sr}$ . The first one is a state (which stores the information  $r$ ) and the other is the belief state that  $r$  is true. Suppose  $S$  believes that no rules  $r$  have characteristic  $C$ ; then if  $S$  encounters  $r$  having  $C$ , he will conclude that it is false that it is  $r$ . If  $B_{sr}$  is the belief state whose content is  $S$  believes that  $r$  and  $r$  is the rule stored by  $S$ 's language processing mechanism then, as Stich<sup>30</sup> says,  $B_{sr}$  and the subdoxastic state  $r$  will not cause the belief state that some thing is not  $r$ .<sup>31</sup> To arrive at the conclusion we need the additional belief state  $B_{sr1}$ ; the latter is that  $S$  believes that  $r$  to be true, which is distinct from the rule  $r$ . As Stich observes, "It would be easy enough to marshal many more illustrations of the fact that the subdoxastic states which store grammatical information are largely inferentially isolated from beliefs." There is, of course, some resemblance between the subdoxastic state and the states which contain information about it. Stich says, "Saying that a state in an information processing system represents the information (or fact)  $p$  is to say that the state bears some interesting resemblances to the belief that  $p$ "

Gilbert Harman refuses to believe that there are subdoxastic states which play any role in our inferences; all we have in inferences, Harman contends, are beliefs interconnected with each other. One test will show that he is wrong. Suppose experimenter *P* asks subject *S*, who is a competent speaker of English language and is willing to cooperate, to label two sentences *a* and *b* with two tags *g* and *ug*. Sentence '*a*' reads "Mary goes to church" and sentence '*b*' reads, "Mary go to Church"; '*g*' stands for grammatical and '*ug*' stands for ungrammatical. Now *S* successfully tags '*g*' to sentence *a* and '*ug*' to *b*. When asked what is his reason for doing so, *S* cannot reply for he does not know why he reached the conclusion: he simply believes it. One may point out that *S* arrived at the conclusion with the additional belief state  $B_{sp}$  (*S* believing *p* to be true, where *p* stands for the rule *all verbs following third person singular nouns should have an s*). As I said before,  $B_{sp}$  is a state whose content is that *r* is correct, but it is not the state *r*; the latter I contend, is not a belief state; nonetheless, we use *r* in our inferences. Now imagine that *r* is not a grammatical rule but a rule of concept usage. One who has the competence to use a concept stores the rule for its usage, and this is distinct from the belief that the rule is true. These rules are used in all inferences by all competent speakers of language.

To summarize what I said in this article, acquiring or learning a concept is to learn its proper application in natural language. Such learning involves acquisition of the rules of concept usage. These rules are not propositional; they are internalized goal-oriented subdoxastic states that guide our thought and linguistic behaviour and when properly used these rules instantiate inference patterns which validate transitions from one belief state to another.

## NOTES

1. A Millar. *Reason and Experience*. 1991: Clarendon Press, 71.
2. One could also say that in the first inference the conclusion, *Linda is an unmarried female*, follows from the premise without any undischarged assumption. In this sense, the premise, *Linda is a spinster*, is a *conclusive reason* for thinking that *Linda is an unmarried female*. No proposition other than *Linda is spinster* is needed to derive the conclusion that *Linda is an unmarried female*.

In the second case, the conclusion requires one require some additional assumption to go from the premise to the conclusion such as, "All spinsters are neurotic"; "all neurotic people own cats." Of course I realize that these particular assumptions are not the only ones. As Professor Aune pointed out to me, however, that almost all concepts can be individuated by inferences without further assumptions.

3. M. Dummett. *Frege and the Philosophy of Language*, 1981, London; Duckworth.
4. I realize that not all philosophers will agree with this; nonetheless, this is, I contend, an important point that should be mentioned here.
5. Dummett as above, 388.
6. Millar as above, 71.
7. G. Evans. *The Varieties of Experience*, 1982; Oxford: Clarendon Press.
8. W.V.O. Quine. *Ontological Relativities and Other Essays*, 1969, Columbia University Press; New York.
9. N. Goodman. *Fact, Fiction, and Forecast*, 1965; Minneapolis: Bob-Merrill.
10. J.L.Pollock. *Contemporary Theories of Knowledge*, 1986, London: Hutchinson.
11. J.L.Pollock. *Justification and Knowledge*, 1974, London: Hutchinson,13.
12. This is Goodman's word.
13. Pollock (1974) says that this is not the literal sense of 'seeing'.
14. This is a term I have borrowed from Pollock (1974).
15. This subject may not be able to utter the word 'whale', for he may know English. Nonetheless, I assume that he has a concept of whale if he is able to identify it as being the same creature as whale and not as a shark or porpoise.
16. This is a phrase I have borrowed from Pollock (1974),14.
17. The same thing can be explained by saying that when we learn a language, we learn its rules, but we do not always apply or use them correctly.
18. Pollock (1974), 14.
19. Pollock,(1974), 15.
20. *ibid*, 15.
21. *ibid*, 16.
22. *ibid*, 14.
23. *ibid*, 15.

24. Pollock (1986), 130.
25. *ibid*, 128.
26. Strawson, P.F. (1952). *Introduction to Logical Theory*. New York: John Wiley & Son.
27. Feigl, H. "De Principiis Non disputandum". (1950). In M. Black (Ed.), *Philosophical Analysis*. New Jersey: Prentice Hall.
28. Salmon, W. 'Should we attempt to Justify Induction?'. *Philosophical Studies*, 1957,8,33-48.
29. Stitch, S. "Beliefs and Subdoxastic State". *Philosophy of Science*, 1978,45,499-518.
30. Stitch says that one can say that it is an unconscious belief; hence, *S* cannot articulate it. The whole theory of the unconscious is hypothetical and is therefore one which should be best avoided.
31. Italics mine.

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