IS PERCEPTION ENCAPSULATED?
The Debate between Fodor and Churchland

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Approval of the Graduate School of Social Science

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ABSTRACT

IS PERCEPTION ENCAPSULATED?
The Debate between Fodor and Churchland

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The argument that the encapsulation of perceptual modules provides secure bases for the reliability of observation in scientific disputes is strongly rejected by Churchland. While this debate was carried around the illusions, it reached to a fruitless point because the notion of illusion, the meaning of illusions and its place in the cognitive system is ambiguous. In order to come to a meaningful conclusion, the debate should be enriched by some other and clear evidence.

Keywords: Theory of Encapsulation, Plasticity of Perception, Illusion.

ÖZ

ALGILAR YALITIK MIDIR?
Fodor ve Churchland Arasındaki Tartışma

BOZ, Nevfel

Yüksek Lisans, Felsefe Bölümü

Danışman: Yar. Doç. John Bolender

Aralık 2006, 37 Sayfa

Algı modüllerinin yalıtık (encapsulated) olmasının, bilimsel meselelerde gözlemin güvenilirliğine sağlam bir zemin oluşturduğu iddiası Churchland tarafından reddedilmektedir. Bu mesele illüzyon örnekleri çerçevesinde yürütüldüğü için kısır bir noktaya yönelmiştir. Çünkü illüzyon kavramı, illüzyonu anlama ve bilişsel sistem içindeki yeri muğlaktır. Anlamlı bir sonuca ulaşabilmek için tartışma başka verilerle genişletilmelidir.

Anahtar Kelimeler: Enkapsulasyon Teorisi, Algıların Plaskitliği, İllüzyon

There Is More Light Here

A man saw Nasruddin searching for something on the ground,

"What have you lost, Mulla?" he asked.

"My key," said the Mulla.

So the man went down on his knees too, and they both looked for it.

After a time, the other man asked: "where exactly did you drop it?"

"In my own house."

"Then why are you looking here?"

"There is more light here than inside my own house."[1]

[1] "There Is More Light Here" is found in Idries Shah, The Exploit of the Incomparable Mulla Nasruddin, (New York: E.P. Dutton, 1972), pp.26-27.

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INTRODUCTION

In the philosophy of mind, one of the main issues is whether mind is a functionally organized entity, a monolithic whole functioning in a global input-output profile; or whether mind is organized in distinct and highly specialized modules communicating with each other very limitedly. The second view elaborated by Jerry Fodor is relatively new and popular.

After Fodor published his article “Observation Reconsidered”, discussions on the plasticity of perception were triggered. Basically Fodor’s position is as follows: There are certain modules functioning in perception processes which are encapsulated and they are not open to intervention. That is, a module’s operations are not sensitive to information outside of its proper inputs.

> Imagine a computational system with a proprietary (e.g., Chomskian) database. Imagine that this device operates to map its characteristic inputs onto its characteristic outputs (in effect, to compute a function

> from the one to the other.) and that, in the course of doing so, its informational resources are restricted to what its proprietary database contains. That is, the system is "encapsulated" with respect to information that is *not* in its database.... that's what I mean by a module. In my view, it's informational encapsulation, however achieved, that's at the hearth of modularity.(Fodor 2000a, 63)

So for Fodor the encapsulation is essential for his modularity theory. In the sense that the information available for the use of module is restricted to its proprietary database. As Fodor says that "the claim that input systems are informatonally encapsulated is equivalent to the claim that the data can bear on the confirmation of perceptual hypthesis includes... the confirmation function for input systems does not have access to all of the information that the organism internally represents; there are restrictions upon the allocation of internally represented information to input processes." (Fodor, 1983, 69).

For Fodor our input systems are modular and higher cognitive processes are nonmodular. This can be said that all of the information necessary to perform our task of recognition and description can be contained within the input systems. Fodor proposes a three layered cognitive system. The first level is the transducer level which transforms environmental signals into another form which can be used by the cognizing organisms. The second level is input systems level which performs basic recognition and description functions. As I said for Fodor input systems are modular. The

third level of the system is higher cognitive level which performs complex operations for example thinking.

These modules are hardwired, that is, they are associated with specific neural structure and also these modules are domain-specific which refers to constraints on the range of information a module can access. As Fodor puts it “the domain specificity of an input analyzer by showing that only a relatively restricted class of stimulations can throw the switch that turns it on. ... – one in which perceptual analysis requires a body of information whose character and content is specific to that domain-“(Fodor 1983, 49). Different kinds of input analyzers such as visual or auditory modules do not have access to the same information.

According to Fodor modular systems have nine different properties; first, modules are domain specific, they operate and have a cognitive structure which is unique to certain stimuli. Second, modules’ operations are mandatory which means they are cognitively impenetrable for example beliefs cannot affect the modules. Third, modules are fast and fourth modules are informationally encapsulated which means they need not any other information in order to perform their operations. Fifth, localized that is modules are realized in dedicated neural architecture. Sixth, modules can be selectively impaired. Seventh, modules have relatively shallow outputs. Eighth, ontegenetically determined which is, modules develop in a characteristic pace and sequence. Nineth, inaccessible that is high levels of

processing have limited access to the representations within a module. (Prinz, 2002)

Fodor accepts that early perceptual processing involves elements that correspond to general empirical assumption about the world. But these assumptions are endogenously fixed in all of us and the perceptual processing is insulated from any contrary assumption that perceiver subsequently comes to believe. Therefore all humans share a common perceptual experience which does not change as a function of any theory. As evidence Fodor exhibits Muller-Lyer illusion.

Some philosophers rejected Fodor's theory of encapsulation that it does not secure a theory neutral observation. One of those who reject Fodor's theory is Paul Churchland, who supports the plasticity of perception. According to Churchland, knowledge always and inevitably involves some theoretical presupposition or prejudicial processing. For him, if we accept Fodor's view that the assumptions that are embedded in the modules are limited and common in all perceivers, it does not mean that they are true.

Accordingly, "if the conceptual framework in which our perceptual responses to the world are habitually framed were to be replaced by a more accurate and penetrating conception of physical reality, then our newly framed perceptual judgment could be significantly more revealing of the structural properties and dynamical details of our perceptual environment" (Churchland 1988, 168)

In addition to this he argues that the rigidity of the prejudicial assumptions may provide consensus between human beings but it is not the proof of objectivity and neutrality. The idea that these assumptions are unchangeable does not mean that they are consistent with reality. Churchland mentions a set of various illusions that, according to him, proves the penetrability of perception such as the Duck-Rabbit, The Old-Young Women or The Necker Cube. According to Churchland these examples show that at least some aspects of visual processing are controlled by higher cognitive center.

Briefly, Churchland says that perceptual processing is not automatically affected from learned theories but after training they may change drastically. Churchland finally says that “our epistemic situation …. is one in which even the humblest judgment or assertion is always a speculative leap, not just in its assertion over its denial, but also in the background conceptual framework in which the judgment is constituted, in preference to the infinity of other conceptual frameworks that one might use instead.” (Churchland 1988, 185)

In the case of perceptual judgments the senses cause the perceiver to activate some specific representation from the antecedent system of possible representations – that is, from the conceptual framework – that has been brought to the perceptual situation by the perceiver. (Churchland 1988, 185)

In answering Churchlands criticism on encapsulation theory, Fodor claims that he did not offer the cognitive encapsulation theory as a guarantee of truth but rather as the psychological condition under which differences among the theories that observers hold are *not* impediments to perceptual consensus among the observers. (Fodor 1988, 189)

In addition to this, Fodor argues that the sort of background information that penetrates perception constitutes a perceptual bias but this bias "leaves perception neutral with respect to almost all theoretical disputes so it could not ground any general argument for the unreliability of observation" (Fodor 1988, 189)

In rejecting Churchland's view that our visual modules are indeed penetrable by higher cognitive assumptions, Fodor criticizes the examples given by Churchland (Duck-Rabbit, Necker Cube or The Old-Young Women). According to Fodor, in this examples, flipping is not the result of "changing one's assumption" rather flipping is caused by changing one's fixation point.

Fodor's position here is briefly defending the reliability of observation and theory neutrality of perception at least in most of the scientific disputes while Churchland's position is briefly defending the plasticity of perception and the impossibility of theory neutral perception. Both Fodor and Churchland uses illusion as evidence for their theories but what they understand from the notion of illusion is not clear.

This thesis argues that Fodor's theory of modularity is problematic in defining the properties of modules. Especially in domain-specificity, innatenes and encapsulation, Fodor's theory is disputable. In addition to this, while the meaning of illusion and the role of illusion lacks a consensus between opponents, the problem between Fodor and Churchland cannot be solved by exclusively depending upon illusion examples. In order to come to a conclusion, arguments other than illusion are also necessary. In the following chapter, we will go fundamentally and deeply through the discussion between Fodor and Churchland and we will comment on the nature of illusions to show the weakness and ambiguity of it.

In this thesis, the approaches of Churchland and Fodor will be criticized that, while they are defending their own theories, they bring different illusions as evidences of their positions although they do not clarify what illusion means to them. This thesis argues that without explicitly clarifying the notion of illusion, it cannot be used as evidence of any theory; hence, they are not reliable. Accordingly, this thesis claims that in order to reach a conclusion, there must be other evidences other than illusions to be discussed.

With the help of examples, we suggest that the theory that perceptual modules are domain specific, innate and encapsulated in a Fodorian sense is a weak argument. Rather the perceptual modules can interact within each other or can be stimulated simultaneously, even can be affected from some cognitive assumptions.

So that if modularity theory is true, it has to be said that, it does not have to necessarily be domain specific and encapsulated. One examples, that is, the Necker-Cube is strong evidences for this. But there are of course some counter examples suggested by Fodor such as Müller-Lyer illusion have to be discussed.

The following chapters will be devoted to the discussion and evaluation of Fodor's arguments and Churchland's counter arguments about the encapsulation of modules, after reviewing the literature on modularity. The illusion examples as evidences and counter evidences for the encapsulation of modules will be evaluated.

After this, the ambiguity of illusions will be elaborated in the sense that they are not enough to prove the encapsulation of modules. Next there will be a concluding evaluation of the discussions between Fodor and Churchland. Finally, the plasticity of perception will be emphasized.

CHAPTER II

CONCEPTUAL FRAMEWORK

In order to elaborate the subject, the notion of modularity should be explicitly defined. But this is not that easy because there is no consensus on the properties of modules. Simply a module is a cognitive or perceptual unit that is relatively independent from the total cognitive system. In other words there are various units called modules in the cognitive and perceptual system that independently process information. Some argue that cognitive system is massively modular while other says that only peripheral systems are modular. Jerry Fodor, whose ideas are mainly discussed in this thesis, defends peripheral modularity.

The debate of modularity emerged especially after the publication of Fodor' Modularity of Mind (Fodor, 1983). According to Fodor modules are domain specific, innate, fast, mandatory, inaccessible and encapsulated. Fodor defined modules as reflex like, hardwired devices that functions automatically and independent from each other. Fodor claims that modules

are peripheral, that is, cognitive system is not modular. Scientists such as Pylyshyn support the peripheral understanding of modularity by bringing evidences from early visual processes. That is, early visual process is prohibited from accessing relative expectations, knowledge and utilities in determining the function it computes (Pylyshyn, 1999)

Against Fodor's peripheral understanding other researchers argue that central processes such as those underlying reasoning, judgements and decision making are modular as well. This argument is named as Massive Modularity (Pinker, 1997; Carruthers, 2005; Sperber, 1994).

In contrast to Fodor's view that modules should have certain properties such as domain specificity, encapsulation, speed, mandatory operation, fixed neural localization; researchers like Pinker (1997) claims that modules should be defined by their specific performance. This functional approach enables to defend modularity even in the lack of Fodor's properties. Although Fodor argues that modules have limited access to information Barret argued that central modules might have wide access to central knowledge stores but process information only in narrow specialized ways (Barret, 2005). Pinker gives the example of internet search engines: although they are specialized they access to the entire internet (Pinker, 2005).

Fodor's argument that modules are encapsulated does not allow us to think about massive modular system because central systems are flexibily integrating different information sources. But those who defend massive

modularity thesis claim that when there is a principled theory surrounding the function of mechanism that predicts the mediation effect of context, the evidence that processing is influenced by multiple systems of information does not rule out modularity; rather it counts as evidence for it (Barret & Kurzban, 2006).

The domain problem is also a discussion between those who defend peripheral modularity and massive modularists. Fodor claim that a system that distinguishes triangles and squares must includes some mechanism that takes as inputs both types of shapes. He concluded that such a system is insufficiently modular to justify the massive modularity thesis (Fodor, 2000a).

Counter argument comes from Barret who suggests an analogy between cognitive modules and enzymes with diverse functions and diverse processing criteria can have access to a single common pool of substrates and yet still achieve specialized processing due to a kind of lock and key template and matching system (Barret, 2005). Barret means that modules like enzymes process a certain and specific input from a pool of inputs. In other words “modules’ proper domains will all have inputs that are, in principle, able to be specified formally” (Barret and Kurzban 2006, 634).

On innateness, against the nativist position of Fodor (Fodor 2000a, 58) evolutionary psychologist defend a position that includes the interaction of genes, environment, and self organizing processes during development (Barret and Kurzban 2006; Marcus, 2004). As a result although Fodor’s

nativisim lead to a static understanding of modules the later views enable a more dynamic module structure. Some critiques doubt whether there are enough genes that will enable massive modularity of the brain. According to Buller & Hardcastle even 40,000 genes would not be enough for trillions of synaptic connections in our head (Buller & Hardcastle, 2000, 314).

According to Fodor, modules exhibit fixed neural architecture in a sense that they are spatially discrete in the brain. He concludes that if modules are spatially localized then an injury can impair a single module and leave other brain functions intact. In addition to this argument, those who defend functionalist view of modularity claim that modularity is possible even in the absence of evidence of spatial localization (Barret & Kurtzban, 2006, 641). According to Pinker a given computational mechanism might be spread out widely accros the brain (Pinker, 1997).

The spatiality problem is even used as a counter argument to the theory of modularity. Evidences that computational procedures can locate in neural tissue in which they are not typically found anatomically or after a damage to one area of the brain functions typically found in that area develop in neighbouring area is used against modularity (Quartz & Sejnowski, 1997, 2002; Ramachandran & Blakeslee, 1998).

To sum up, modularity is a very popular and vivid subject; there are very different interpretations of modularity among those who defend this thesis. Some argue that the brain is or the cognitive system is massively

modular although Fodor is in the view that modularity is peripheral. There are also disputes whether modules are innate or they emerge developmentally (Karmiloff-Smith, 1994). There is also evolutionary approach to modularity which defends modularity from an evalutionary point of view. They argue that each module dedicated to solving problems which is related to a particular aspect of survival or reproduction (Buller, 2005).

Similarly there is no consensus on the encapsulation argument. Those who claim that mind is massively modular has a different understanding of encapsulation than Fodor. Massive modularists say that modules are flexible enough to integrate different information sources. The conclusion of this argument is that modularity is possible without encapsulation in a Fodorian sence. This is also the main argument in this thesis. In other words arguments targeting the accuracy of encapsulation may not necessarily deny modularity.

It has been long time since Fodor wrote his book *The Modularity of Mind*, there has been huge amount of research on that theme and various definitions on the properties of modules have been developed. There is no need to insist that modules should carry the properties that Fodor specified.

CHAPTER III

THE RELIABILITY OF PERCEPTION

II. I. Theory of Encapsulation

Both Churchland and Fodor follow the same sequence in their articles replying to each other. First they discuss whether the encapsulation theory secures a safe ground for the theory neutral observation and second they discuss whether the encapsulation theory is true or not. Practically this study will follow the same sequence to discuss the subjects. But before that the elaboration of the encapsulation theory is necessary.

The theory of encapsulation is a view that perception functions in a modular system in which these modules include very limited assumptions about the nature of the world; and that these modules are insulated from higher cognitive centers. So that this modular system gives input to higher cognitive centers but does not accept any information from these centers. That means, whether higher cognitive centers have some contrary

arguments and beliefs or not, perception functions automatically and without being affected from the assumption and beliefs of the higher cognitive centers.

What are the repercussions of the encapsulation theory? The encapsulation theory provides a consensus between human perceivers and explains why observers perceive similarly. Second, according to Fodor, encapsulation proves the reliability and the possibility of theory neutral observation. To negate the encapsulation theory, according to Churchland, will cause the following repercussions: If observation cannot provide a theory neutral access to reality, then the first and the most important consequence is that we must direct our attention away from the foundational epistemologies, and toward epistemologies that tell a more global story of the nature of theoretical justification and rational belief. A second consequence is that our current observational ontology is just one such ontology out of an indefinitely large number of alternative observational anthologies equally compatible with our native sensory apparatus. And a third consequence is that since some theoretical frameworks are markedly superior to others, the quality of our observational knowledge is in principle, improvable (Churchland 1988, 167-168).

What is the importance of the encapsulation theory? The Encapsulation thesis is a sine qua non for the reliability of observation. Observation is reliable only if the perceptual process is immune from higher cognitive assumptions. That's why Fodor defends the encapsulation of

modules. According to Fodor whatever the belief of the perceiver is, the perceptual process functions automatically and is mandatory, independent from the beliefs of the perceiver.

Accordingly Fodor argues that theory neutral observation is possible. Without encapsulation, modularity has no practical meaning. In that sense the encapsulation of modules is more important than its domain specifity, innateness or mandatoriness. If the encapsulation theory is falsified, the whole modularity of mind is at risk. That's why Churchland attacks the heart of the modularity theory and tries to show that modules are not encapsulated.

II. I. I. The Epistemological Implications of Encapsulation

Fodor offers the theory of encapsulation as an answer to the following question. "What are the psychological conditions under which differences among the theories that observers hold are *not* impediments to perceptual consensus among the observers?" (Fodor 1988, 189) According to Fodor, cognitive encapsulation is an answer to this problem. For him, there are certain assumptions as bias involved in early perceptual processing but they are endogenously fixed in all of us and perceptual processing is insulated from any contrary assumptions or theories. As a result, all human beings share a common perceptual experience which is not subject to change as a function of any theories we may come to embrace.

Churchland opposes this answer saying that this may be “a recipe for a limited consensus among human perceivers but it is hardly a recipe for theoretical neutrality” (Churchland 1988, 170). According to Churchland, this theory of encapsulation results in a universal dogmatism “not an innocent eden of objectivity and neutrality” (Churchland 1988, 170).

Obviously Churchland’s criticism at this point is irrelevant while Fodor does not offer this theory as a guarantee of truth (Fodor 1988, 189). Fodor wants to show that observation is reliable and perception is neutral “with respect to most of the scientific disagreement that observation is called upon to resolve” (Fodor 1988, 189). Whether it guarantees truth or not, Fodor argues that encapsulation theory provides a secure ground for a consensus between human perceivers.

Churchland’s speculations that “the consensus would last only until the first mutant or alien comes along to confront us with a different perceptual point of view” (Churchland 1988, 171) can hardly be seriously discussed. The issues at stake are human perceivers here, not mutants or aliens or let’s say animals. If we take Churchland’s criticism seriously, we can not frame the problem. The case with mutants or aliens has to be discussed separately in a specific context. As this argument is not vital for this thesis, it will be ignored and not discussed in this thesis.

On this subject Fodor has a pragmatic approach in order to explain the consensus between human perceivers and the reliability of observation in

most of the scientific disputes while Churchland is after a theory which will be in accordance with the natural account of truth. On this topic while Fodor has a well defined framework he has a stronger position because in context of perception it is not possible to refer the experiences of intelligent creatures other than human beings. In that sense in order to negate Fodor's theory to refer to experience of Mutants or Aliens is not on the agenda in this thesis.

II. I. II. Is Impenetrability Correct?

The problem here is, as Fodor puts it, not the perfect encapsulation of the modules "but whether they are encapsulated enough to permit theory neutral, observational resolution of scientific dispute" (Fodor 1988, 190) Fodor here especially insists on an illusion namely Müller-Lyer illusion (Figure 1) in order to prove the encapsulation thesis.

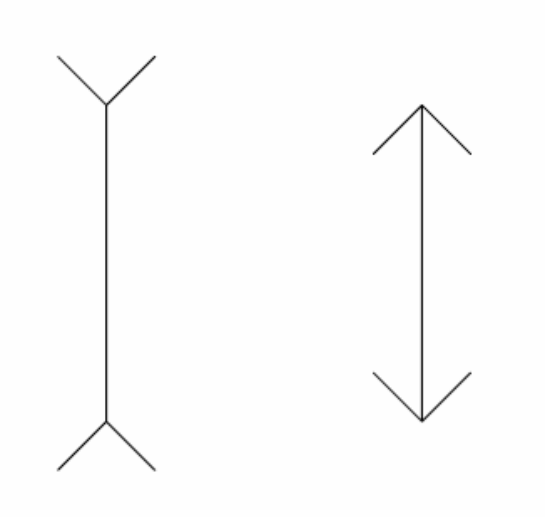


Figure 1 - Müller-Lyer Illusion

The Müller-Lyer illusion is simply an optical illusion consisting of two parallel arrows which are equal in length but the inward one seem longer than outward one. Fodor assumes that we should have seen the arrows equal if the modules were penetrable. Although we know that arrows are equal, we see the inward one longer than other. That means higher cognitive assumptions can not penetrate into perceptual modules because they are encapsulated. If these modules were not encapsulated than the knowledge that the arrows in Müller-Lyer illusion are equal would make a change in perception and we would see the arrows equal.

Churchland reacts by bringing other illusion examples as counter proofs such as Duck-Rabbit, The Old-Young Women, Vase-Face and Necker Cube. As it is seen below (Figure 2), in vase/face illusion, Churchland sees the evidence of the penetrability of perception.

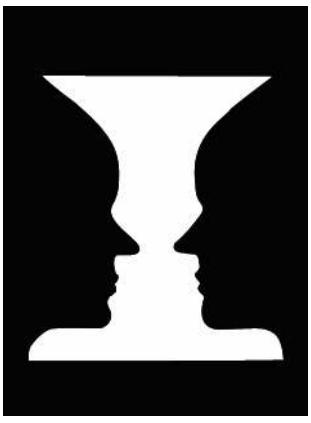


Figure 2 - Vase-Face illusion

Similarly, Churchland's point is that according to the observer's assumption the Necker Cube (Figure 3) is seen differently. But Fodor rejects this view and he says that the Necker Cube is seen differently when the fixation point differs (Fodor 1988, 190).That means, the cube is seen differently according to the point that the observer concentrates on.

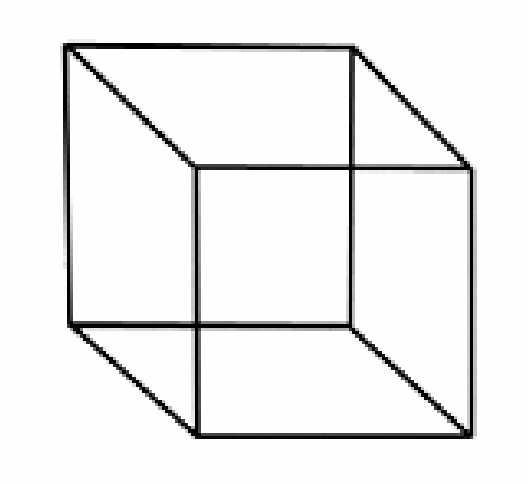


Figure 3 - Necker Cube Illusion

Actually it is not true that Necker Cube (Figure 4) changes by changing the fixation point. It is possible to see Necker Cube in both ways by looking at the very same point. When we assume that

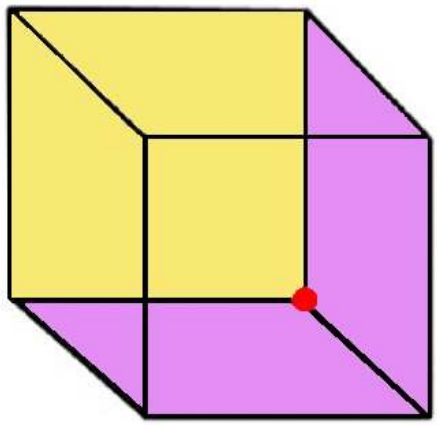


Figure 4 - Necker Cube Illusion

the yellow wall is at front, the red point comes to the front-left corner at the bottom. When we imagine the yellow wall as the back wall, the point goes back. Although we look at the very same red point, we see the cube differently. Consequently, the assumption affects how we see the cube. As a result, this illusion is a strong evidence for Churchland's position.

Now obviously the structure of Müller-Lyer illusion and Necker Cube illusion is essentially different because the Müller-Lyer illusion is two dimensional while in Necker Cube perspective is an important factor. The other illusions like Duck-Rabbit, The Old-Young Women, and Vase-Face illusions, it is difficult to say whether it is a fixation point or an assumption that affects the view.

But is it a right way to prove the encapsulation of modules by referring to such illusions? Recently some research results show that the Müller-Lyer illusion is diachronically penetrable in a cross-cultural context "... individuals who grow up in *some* sort of visual environments during their first twenty years of life are not susceptible to the illusion. Furthermore, these results, along with those from many other studies of typical "Western" subjects, show that children are usually not less susceptible to the Müller-Lyer illusion compared with adults" (McCauley and Henrich, 2006,13).

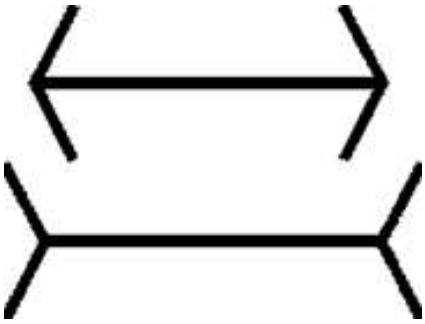
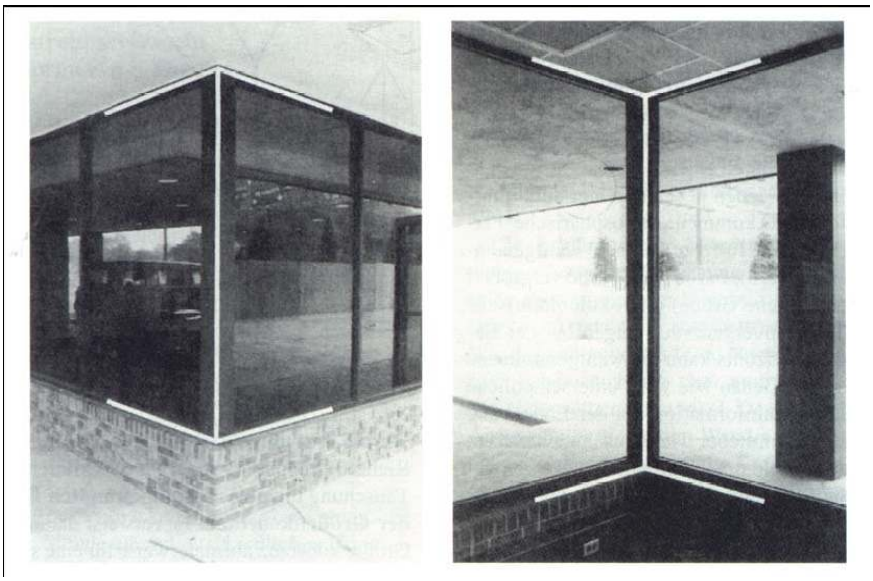


Figure 5 – Müller-Lyer Illusion

Although Fodor declares the universality of Muller-Lyer illusiıon, some research shows that susceptibility to the Müller-Lyer illusion neither uniform nor universal. As McCauley and Henrich said that "For those who experience it, the illusion may persist, but susceptibility to the Müller-Lyer illusion is neither uniform nor universal. ….. Through most of our species' history most of human beings were probably not susceptible to the illusion. Although Suku children, San adults, and a sample of South African mine workers from the

early 1960's are the only groups in the study that manifest substantial imperviousness to the Müller-Lyer illusion, we suspect that they are not the only human beings in history who would have." (McCauley and Henrich, 2006, 20).

There are some other explanations on the nature of Müller-Lyer (Figure 5) illusion. According to Gregory, although Müller-Lyer illusion is two dimensional, it is perceived on the basis of a three dimensional knowledge. In other words, the lines are interpreted spatially. (Gregory 1966).



Spatially Interpreted Müller-Lyer Illusion (Figure 6)

Accordin to Gregory, the Müller-Lyer figure is spatially interpreted. If Gregory's thesis is true it can be an explanation to why Western subjects are more susceptible to this illusion because they live in a rectangular world

(Figure 6). It can also be counter evidence to Fodor that the assumptions about the three dimentional world affect our perception of two dimentional figures.

There are some other explanations for Müller-Lyer illusion; as R. H. Day proposed that perceived length of the illusionary figures is a compromise between the actual length of the line segments and the overall length of the Müller-Lyer figure. Therefore, the line segment with outward wings appears larger because the overall figure is larger than the figure with inward wings. (Day, 1989)

As a result, while the nature of illusion is not explicit yet, they are interpreted very differenly according to different view points. Because of this in order to reach a conclusion there must be more materials to discuss on it.

CHAPTER IV

ILLUSIONS AS EVIDENCE TO THE THEORY OF ENCAPSULATION

This subject is ambiguous and manifold. There are a manifold of illusions which are structurally different from each other. Some of them are three dimensional; some of them auditory etc. For example, the structure of Müller-Lyer illusion and bent-stick illusion are essentially different. Consequently while there is a wide range of illusions, and while there are essential differences between their structures, and finally, while there are different and contrasting explanations on the nature of illusions it is not possible to reach a conclusion about the modularity of mind or the encapsulation of modules

Ideas about the nature of illusion are manifold. The first and foremost ideas about illusions are that they are a discrepancies from the truth. An illusion is generally associated with our perceptions and all kind of perceptions can be subject to illusions. But we do not simply reject or accept

illusions, for many kinds will be accepted as important phenomena of mind. (Not natural phenomena of physics, but phenomenal phenomena of physiology and cognitive process of the brain).

It is often difficult to know what is responsible for an illusion. Even though they are often called ‘optical illusions’ most are of physiological and psychological origin. Optic can produce so many interesting or wonderful visual effects such as distortions, changes of size or distance, repeated patterns, illusion of lightness and color, illusion of interpretation such as ambiguous, impossible and puzzle pictures.

Psychologists and physiologists often disagree when trying to explain illusion. There are many practical and repeatable experiments which have been accompanied by a set of incompatible explanations about the nature of illusions. One of the well-known experiments is the experiment of Müller-Lyer which is simply carried out with arrows Think of the famous illusion of “bent-stick case”, for instance: In this case, there is something external to the perceiver to perceive (that is the stick), yet, it is perceived erroneously.

These kinds of “errors” become apparent when our perception contradicts with another information or other’s perception. In other words, the process is a kind of test process in which our perception is measured or compared with the others in the light of information available. For example seeing someone familiar in a crowd as an acquaintance, a person looks again or asks someone for confirmation.

Illusions are characteristic error of our visual system that may give us plenty of clues to understand the underlying mechanism of our mental system. There are so many processes that contribute to our perception and it is often difficult to know which is responsible for an error or illusion. It is known that each sensory receptor detects its own special energy and then transmits a kind of signals to brain. After receiving the signals the brain interprets these signals and makes them meaningful.

What comes out as a result is what we call as perception. Normally most of the time these interpretations of received signals are correct but sometimes our interpretation can be incorrect. So these misinterpretations are called illusions. When we confront or witness an illusion we perceive that something does not correspond to the reality or to what exists in the real world.

Since, as I stated above, an illusion is a process of perception, it follows that there are different sorts of illusions corresponding to the variety of means of perception that we have. An illusion is a distortion of sensory perception. Every human sense can be deceived by illusion. We can mainly mention five different kinds of illusion. First is an optical illusion, which use false perspective and include motion illusion, grid illusion, etc. Second is a mirage which is optical distortions and can be photographed for example water in the desert. The third one is auditory illusions which exploit our hearing such as Shepard tone.

Fourth kinds of illusions are touch illusions which exploit our sense of touch. And finally magic illusion which is used for entertainment and magicians uses tricks to give their audiences the impression that impossible events have occurred. Among these, visual illusions are the most widespread ones. Visual illusions are some visual phenomena that seem to optimize the relationship between the retinal image and visual images. Illusions can be thought of as bogus stories things that exist in the real world.

For example, a person looks taller than he really is; a face is seen in a cloudy formation. So the process of appreciating an illusion may be closely tied to one of the essential aspects of vision. It is expected that this point of view is not shared by all visual psychologists. Many of them take illusions to represent in visual process.

Others see illusions as an example of algorithm in their computer model of the brain and that algorithm have been overriding a second algorithm. The theory of algorithm and representation indicates that the information must be represented in some representational system which makes information and computations must be performed by some particular algorithms.

“The computational theory of vision is a theory that treats the human visual system as a machine that given pairs of retinal images as inputs” (Segal 1989, 191). According to this theory, throughout the input and output procedure, the visual system makes some assumptions and if the visual

system fails to make assumptions, it would not be able to infer the nature of the causes.

To go beyond, there is a group of phenomena in which the retinal image is enhanced or made complete by the brain. Brain processes represent ways of improving the retinal image in non-optical ways. These brain processes affect as an example of method that makes it beyond the limits of the law of optics in order to bring out visual information.

Illusions might be treated as somewhat evolutionary derived reflexes of our ancestors to survive. To my account, they are not quite inherited reflexes, but if the culture considers them important, it can be hard wired during childhood. According to David Miller (2000, pp.130)

> The pygmy living in a dense forest has no need for the size constancy needed on an open plain. People living along the Amazon would not see a fountain of George Washington... On the other hand, all cultures inherit the ability to quickly recognize friendly and alien faces...We automatically suspect someone who looks different. In older times, such reflexes may have helped identify someone from an alien village. In truth, we see the way our culture teaches us to see.

Illusions are like visual surprises. They appear to contradict physical reality of our world. Illusions seem to display some basic biological features. For example we cannot override an illusion even if we know that it does not make physical sense. And also one can still see illusion even it is only

exposed for a second. I mean, they are vital to survival like automotive reflexes.

To sum up, there may be other things to say than above mentioned on illusions. So we need more and different evidences other than illusions. In order to provide a safer ground to this problem.

CHAPTER V

CONCLUDING REMARKS

Fodor's modules are domain specific, inaccessible, innate and encapsulated. The modules functions automatically in accordance with a proprietary database. That means the modules are immune to external information. Müller-Lyer illusion is a good evidence for this. Because although the perceivers know that the lines are equal, he cannot help seeing one of the lines shorter.

But this is not the whole story in other words *the mind doesn't work that way*. First of all, studies in developmental psychology and neuropsychology show us that the mind is not modular at least in infancy. It is said that modules develops with maturation. Even if it is true, does that mean that these modules are domain specific and encapsulated? The Müller-Lyer illusion at the first glance seems to prove Fodor's thesis. But before accepting that this illusion is the proof of encapsulation there must be a plausible explanation why we perceive the arrows differently.

In other words what causes the Müller-Lyer illusion? If the reason for this error is the proprietary database of the modules, then Churchland is right. (In the sense that the information available to module may be erroneous). As a result observation is not neccessarily reliable. If the reason of this illusion is external to the module then the module is not impenetrable. Consequently without an explicit evaluation of the nature of illusions it does not help to use illusions as evidence of encapsulation theory.

The illusion examples of Fodor and Churchland seems to prove both of them which means no one can prove his position. Fodor defends encapsulation theory in order to prove the reliability of observation in most of the scientific disputes while Churchland rejects encapsulation assuming that it does not secure a universal truth. It is clear that they have different aims. Fodor's position is more pragmatic while Churchland is seeking a naturalistic view of truth.

Second, while both of the philosophers do not have a clear understanding of illusion, and while they can not evaluate the position of illusion in the system, they claim different illusions as evidence for their arguments. How can it be possible to suggest illusions as evidence of an idea without having a clear notion of it?

Considering the articles replying each other between Fodor and Churchland, illusions occur as a non-confidential and insecure evidence for encapsulation theory. Because in the very same illusions such as Necker

Cube both Fodor and Churchland sees as evidence their position. Fodor argues that Necker Cube changes because of the change in the fixation point while Churchland argues that Necker Cube changes because of the changing assumption.

As it is mentioned above the change in the perception of Necker-Cube is not related with the point that perceiver fixates. As we have proved above the perception of Necker-Cube changes even when looking at the very same point. In order to clarify the discussion, there must be more than illusion to talk about and to comment on it or to discuss.

Put the illusions aside, are the perceptual processes really modular in a Fodorian sense? Do these modules interact within each other and do they interact with the high cognitive facilities? Is there a vertical hierarchy between perception and cognitive system or is the system a whole? Recent research shows that there is a close connection between smell and taste, between hearing and speaking, between seeing and touching. We know that people who cannot see, develops a significant sense of hearing and touching. Accordingly some people perceive musical notes as colors or odors as shapes etc. This can be considered as a breakdown of modularity theory.

Churchland's arguments that perception qualifies by training is also another reasonable argument. As a result we can say that there is not enough evidence to say that human modular system is encapsulated rather there are more convincing counter examples.

From Fodor's pragmatic view there can still be a ground for the reliability of observation in a cultural context. Fodor argues that with respect to the most of the scientific disagreement that observation is called upon to resolve, perception is de-facto neutral (Fodor 1988, 189). Fodor's point here is pragmatic and aims to provide a secure ground for observation in scientific disputes.

Encapsulation is not sine qua non for this. Now if we take science as a product of western culture and the scientific disputes as the problems of this culture, the consensus between observers can be provided by referring to the common cultural codes. So the observers who have these cultural codes will have a consensus of the scientific disputes.

The perceptual modules are not necessarily domain-specific because some people associate different perceptual data to each other. For example auditory inputs stimulate visual module, smells stimulates tactile senses etc,.

The perceptual modules are not necessarily encapsulated because our perceptual system is affected from our assumptions as we have derived from the experiments in the previous chapter. That is the case of Necker-Cube illusion is an example in which perception is affected from cognitive assumptions. In addition to this even memory and emotions affect the perceptual processes.

As a result, the human mind is still largely unknown to us. There may be different theories to explain its structure. But if the mind is modular in its

peripheral areas most probably these modules are not encapsulated. Because of this a more accurate theory of modularity other than Fodor's is necessary.

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