СТАТЬИ / ARTICLES

CINEMATIC OBSERVATION IN LINGUISTICS AND BEYOND: TOWARDS AN EMPIRICAL SCIENCE

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The article raises the problem of methodology in the language science and discusses a possible way of solving this problem by recognizing films as a source of observational scientific data. The article claims that the reliance of classical linguistics upon logical analysis and interpretation as a sufficient method of research with texts as primary sources of data is a fallacy. This fallacy is accounted for by a number of epistemological factors. Firstly, science generally concerns itself not with what things are, but how they appear to the standard observer in the process of interaction. Language, oppositely, is studied as a self-sufficient sign system in and of itself. Secondly, any science constructs its object and produces valid knowledge about this object on the basis of empirical data put together in a logical way, which means that theory and observation are two co-dependent technologies of science ensuring that any claim about the experiential world is verified and "life-tested". In linguistics, conversely, such an empirical test and verification of claims is replaced by a logical procedure of interpretation and analysis on the basis of texts, which is far from empirical evidence, but rather appears as another set of claims. In other words, texts take on the role of empirical data in linguistics, which is wrong for one simple reason that texts are logical interpretations devoid of any perceptual dynamics and, therefore, unable to be observed. In order to break with such a product-oriented approach and the logico-positivist tradition, and study language beyond written texts only, especially given that illiterate people are language users too, linguistics needs to take an empirical turn. To make this turn possible, linguists need to reconsider the empirical role motion pictures play in the study of how a human's experiential world is enacted and constructed into a coherent story. Recognizing that films make the work of somebody else's imagination observable, linguists and cognitive scientists as well could make practical use of cinematic observations as a primary source of evidence for claims about how a human imagines things, constructs meanings, communicates with others, and uses language in general to make all of those things possible. The article elaborates on the cinema-mediated empirical methodology of language studies and specifies what types of observable actions (or their implications) upon linguistic objects we can find in films, including attentional processes, the dynamics of the lived experience, emotioning and sensorimotor

activity. As opposed to apparatus theory, the conception of language as experiential dynamics observable in films fits in with the philosophy of radical constructivism and enactivism according to which a human, by analogy with an actor, *enacts* the world as a (biological, social and cultural) history of her previous actions, these enactments becoming the world itself.

Keywords: primary sources of evidence, language data, experiential world, lived experience, eigenbehavior, enactivism, radical constructivism.

КИНО КАК МЕТОД НАБЛЮДЕНИЯ В *ЛИНГВИСТИКЕ* И НЕ ТОЛЬКО: НА ПУТИ К ЭМПИРИЧЕСКОЙ НАУКЕ

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Обсуждается проблема методологии в науке о языке и предлагается возможный путь ее решения, который заключается в обращении к визуальной семиотике кинофильма как источнику эмпирических научных данных. Утверждается, что в основе методологического кризиса классического языкознания лежит принцип самодостаточности аналитической логики как единственного инструмента познания языковых данных, в роли которых выступают письменные тексты. Причины, по которым лингвистика оказалась в подобном кризисе, носят эпистемологический характер. Во-первых, наука изучает не столько то, что есть объект на самом деле, сколько то, как этот объект функционирует в процессе взаимодействия с точки зрения наблюдателя. Язык, напротив, рассматривается как абсолютизированная система знаков, существующая «в себе» и «для себя». Во-вторых, степень валидности научных знаний об объекте определяется логической связностью теоретического построения, упорядочивающего эмпирические данные о мире, что означает функциональную взаимосвязь теории и наблюдения, обеспечивающую науке опытную проверку и верификацию любых выдвигаемых гипотез и тезисов, доказательность которых не может исчерпываться другими гипотезами или другими тезисами. В лингвистике, однако, подобная верификация и проверка осуществляются методом логической интерпретации и анализа текстов, которые не являются источником эмпирических данных, а представляют собой продукты того же самого интерпретационного анализа. Такая методология создает порочный круг по той простой причине, что тексты не могут выступать в качестве эмпирической доказательной базы, поскольку лишены перцептуальной динамики, и поэтому их невозможно наблюдать ни в обыденном, ни в научном

смысле этого слова. Чтобы отойти от устоявшейся логико-позитивистской традиции и изучать язык не только на материале текстов, *лингвистике необходим поворот в сторону эмпирического подхода*. Такой поворот возможен, если признать эмпирическую ценность кинофильмов в изучении того, как экспериенциальный мир человека конструируется и «разыгрывается» в пределах сюжетной линии. Исходя из того, что работа человеческого воображения становится доступной для непосредственного наблюдения посредством кино, лингвистика и смежные дисциплины, включая когнитивные науки, могут использовать на практике данный эмпирический материал в качестве доказательной базы для различных утверждений о том, как человек воображает мир, конструирует значения, общается с другими и использует язык в целом, чтобы осуществить все эти когнитивные процессы. В статье подробно описывается и объясняется эмпирическая методология исследования языка, уточняется, какие виды действий и взаимодействий с семантическими объектам можно наблюдать косвенно или напрямую в кинофильмах (в частности, направление внимания, динамику пережитого опыта, эмоциональные и сенсомоторные процессы). Концепция языка как экспериенциальной динамики, наблюдаемой в фильмах, продолжает философские идеи радикального конструктивизма и энактивизма, согласно которым человек подобно актеру «разыгрывает», или генерирует в своих перцептуальных действиях, мир как биологическую, социальную, культурную историю всех предыдущих подобных действий.

What subject-matter, method, and primary sources are in science

Paradoxical as it may sound, linguistics and other sciences stand in a sort of opposition rather than function in an epistemological unity. The main reason is methodological. What linguistics claims to be empirical data (i.e. language data aka texts) sufficient for an investigation of language prove far from empirical from a meta-scientific point of view. To make this problem more explicit, I will elaborate on the main universal principles of scientific knowing and learning.

First and foremost, let us address the question, What does science investigate? If the answer is 'nature' or 'nature of things', there is still one reservation. Nature cannot investigate itself. Taking this reservation into account, Werner Heisenberg said that the "the object of research is

no longer nature as such, but a nature *confronted by human questions*" [Heisenberg 1958, 18] (emphasis is added) and "[t]he deeper the scientist looks, the more he sees himself" [Heisenberg 1958, 17].

Much earlier, Henri Poincaré expressed a similar idea that nature has a bodily form and space is what corresponds to the way our muscles work and our body moves. "If we did not have solid bodies, there would be no geometry" [Poincaré 1902, 51]. Poincaré's legacy laid the groundwork for Albert Einstein's revolutionary theory of physics, physical objects and reality. "Real external world is set in the conceptual form of bodily objects of different kinds which owe their meaning, but are not identical, to the totality of sense impressions associated with these objects" [Einstein 1936, 350]. "Physical concepts are free creations of the human mind, and are not, however it may seem, uniquely determined by the external world" [Einstein & Infeld 1967, 31].

Another great physicist Paul Bridgman dismissed the idea of absoluteness or 'true nature' as scientifically meaningless. "An object with identity corresponds exactly to nothing in nature" [Bridgman 1958, 35]. There is not much sense in asking what an object really is, it is more scientifically relevant to understand what we do with it. Any object always comes with the subject because "knowledge and matter (Subject and Object) exist only relatively one for the other and constitute phenomenon" (emphasis in the original) [Schopenhauer 1903, 237]. As Niels Bohr put it, "in our description of nature the purpose is not to disclose the real essence of the phenomena but only to track down, so far as possible, relations between the manifold aspects of our experience" [Bohr 1987, 18].

Thus, the question that science deals with is not *what* an object is, but *how it appears* to the Subject in a particular context (domain, frame of reference) where the interaction between the Subject and Object takes place. This Subject in the process of interaction is usually referred to as the observer and the object of any scientific investigation should be more accurately described as the domain-specific observer's experience. With this in mind, we should proceed with an understanding of science as the domain of scientific statements that rests on operational coherence and that "does not need an objective independent reality, nor does it reveal one" [Maturana 1988, 4].

Such a construal of scientific knowing seems to agree with the way modern science comes to conceptualize observation and experiment. As what Thomas Kuhn once suggested, a scientist chooses for her experimental observation only those perceptions which indicate opportunities for the fruitful elaboration of an accepted theoretical paradigm

[Kuhn 1970]. Thus, any observation cannot but come under the influence of "what the scientists have in mind", which guarantees "coherence between theoretical and empirical information" [Kosso 2011, 22]. It means that a scientist chooses to investigate her own experience with the world where ideas and perceptions reciprocate each other.

The next question arising is, How does science investigate what it does? There is no better answer than the one given by Einstein that all science "co-ordinate[s] our experiences and bring[s] them into a logical order" [Einstein 1955, 1]. To co-ordinate and order experiences, we must have them, and this is where empirical interaction with the world comes into play. To put it simply, the scientific method is based upon observation and logical interpretation, which works in the following way. A scientist constructs a coherent and reliable explanation of what she observes so that this explanation (hypothesis) could serve as a prediction about how, where and when the observed phenomenon can be repeated again. Explanations are theoretical tools invented by scientists to make the experiential world more predictable and manageable [Glasersfeld 1995, 117].

Logic and observation are two reciprocally dependent ways of scientific knowing. Logic underlies the coherence of theorizing about what we observe, observation proves and verifies what we cohere in our theories.

The point made above explains why it is observation that comes first as evidence for scientific claims while logical interpretation (i.e. other claims) comes second. Primary sources of evidence are empirical data. Empirical evidence is information acquired by observation or experimentation, in the form of recorded data, which may be the subject of analysis. Secondary sources describe, discuss, interpret, comment upon, analyze, evaluate, summarize, and process primary sources [Audi 2001, 293].

Senses and perception in general are raw material upon which experience builds. In science, raw material is first-hand source, first-hand is more reliable and feels more 'real'. In Arthur Schopenhauer's terms, our objective view of the world comes from nothing but our sensation understood by our reason as a logical effect of something happening 'out there': "[N]othing objective can ever lie in any sensation. ... [T]he Understanding conceives the given corporeal sensation as an effect. ... It is therefore the Understanding itself which has to create the objective world ... [I]n fact, the senses supply nothing but the raw materials which the Understanding at once proceeds to work up into the objective view of a corporeal world" [Schopenhauer 1903, 61].

Where linguistics stands and why it should move on

Since (and long before) Ferdinand de Saussure elevated linguistics to the status of a separate science, its theoretical apparatus and practical framework have not undergone much change and can be formulated in the following way:

1) The subject matter of linguistics is the content of language, i.e. language in and of itself (linguists concern themselves mainly with the structure, function, form and meaning of semantic units, concepts, propositions and their relationship).

2) The method is logical interpretation.

3) Primary sources of data are texts.

There are a number of reasons why this methodological tradition has become deeply ingrained in the language science. Firstly, the view of language as a self-sufficient object of research rests upon the classical "telementational model" of communication [Harris 1981], a lay understanding of how people interact with each other by means of symbols, scientifically legitimized by Saussure and later reinforced in the computer-mind metaphor [Gardner 1985]. According to this model, people send (encode) and receive (decode) messages aka linguistic signs. Consequently, language begins to be viewed ontologically as some elaborately designed system existing even genetically [Chomsky 1975]. Secondly, there has always been a strong influence of cartesian dualism and analytic philosophy on the conceptualization of language, which has been taken to such an extreme that I may term it 'ternarism'. It means that the fundamental mind–matter dichotomy turns into a triad with the arrival of language as the latter is placed somewhere in between and is radically segregated from both the material (physical) and mental worlds. Thinking (knowing), language (wording, naming) and bodily behavior (speech production in a physical sense) are separate activities. There are semantic, mental and material objects that we need to distinguish [Ogden & Richards 1923]. Language is what represents how things stand, but it may not be what is really 'out there' or what we really feel or what we really think. That is why we do not need empirical evidence to study language objectively. This thesis also found favor with those linguists who wanted an alternative, but not less convenient view of language as a self-sufficient system. This novel ideology took the form of logical positivism and was proposed by Ludwig Wittgenstein [1922] who believed that language is what matter consists of and consists in. The external world is nothing short of logical language and facts put in propositions are what we live by. Therefore, claims about facts of language do not need to be put to an empirical

or experiential test. Logical consistency is enough, just like in mathematics. In view of what has been said, the last reason explaining why texts are accepted as a sufficient source of evidence in linguistics seems quite obvious. Text is a constellation of static marks on paper conveniently available for analysis and interpretation. Inscriptions are products of writing, are easily objectified, and give a sense of objectivity. Texts have been the dominant technology of language also because "it is in the development of literacy, in the schooling needed for learning to read and write, that theories of language structure have become necessary" [Linell 2005, 5]. However, there are certain grounds upon which it is possible to claim that there is something wrong with the understanding of language, language data and methods of their investigation presented above. I will summarize arguments based on epistemology and philosophy of science.

1) As for the subject-matter, first of all, language is a generalized concept that cannot be directly experienced or interacted with. For example, let us take the concept of light in physics. "We never experience light itself, but our experience deals only with things lighted" [Bridgman 1958, 151]. Similarly, we never experience language itself, but *bodily behaviors through which it is* (or appears to be) *spoken*. Secondly, it follows, content of words is always relative and depends upon the interaction and the viewpoint of the observer. "The relative meaning of every concept, or rather of every word," depends "on our arbitrary choice of viewpoint" [Bohr 1987, 96]. Thirdly, there is no transmission of information, meanings or any other types of language content. We cannot exchange meanings, we can only produce voice, or noise, and visible signals that can (or fail to) be perceived by somebody else. Only then these signals come to be linguistically interpreted based upon another's experience [Glasersfeld 2006, 3]. Let us take babies, for example. A parent knows that she cannot transmit any semantic content into a new-born child, the only possible thing is to affect the baby's behavior by means of vocal sounds and observe the reaction.

2) As for the method, the sufficiency of logical interpretation and analysis by analogy with mathematics seems to be questionable for one simple reason that language is observable through communicative behaviors whose dynamics can be unpredictable and illogical in many ways. Meaning is something communicatively searched for in the state of confusion [Watzlawick 1977, 27], "there is no understanding without misunderstanding" [Puljic & Puljic 2020, 108] and "if we spoke logically all the time, we would never get anywhere. We would only parrot all the old clichés" [Bateson 1972, 15]. That language is viewed as a representation of the real world or of our knowledge is another logical flaw.

In order to make sure that the world and its linguistic representation are two different things, we have to compare them. In an act of comparison we have to attend to one independently of the other. This independence is impossible because there is no such a thing as a representation of nothing, or the nameless world.

3) Texts are somebody's interpretations and in no way are they primary sources of data because we cannot observe an interpretation. Besides, "[A] text is often itself no more than an interpretation of texts that the author has read. Primary literature is nearly always to a large extent secondary literature to other texts" [Mitterer 2013, 144]. Moreover, written texts are devoid of real-time interaction, experiential context and are not always reliable from the communicational point of view. A tapescript of a trial will tell us very little about the way people used words and understood their meanings during the trial. Lastly, there are 781 million illiterate people who cannot write and read texts but still are language users. This means that either text-oriented studies are not studies of 'real' language or there is something wrong with the way 'real' language data are understood or (most probably) both.

To solve the described epistemological problems linguistics is riven with, one needs to shift away from the static, product-oriented view of language to a dynamic, process-oriented one [Linell 2005, 20]. Probably, the time has come to study not simply what a person says (or rather, writes), but *how a person acts upon what she (thinks she) says*. This shift implies a method of observing such actions. It is not fair to say that these are hardly observable because we can easily watch a child moving her eyes and the whole body in search of things as we name them (e.g. "Where is the dog? Where is the toy?"). It would be more fair to say that such bodily movements become impossible to watch in the process of naming when the named objects are not around. Yet, this is where films and cinematic observations can help.

Studying language in motion

To prove why films can be a reliable source of empirics in investigating language, I will first make it explicit how language can be understood as a dynamic interactional process accessible for observation rather than a static text accessible for interpretation only.

A methodological shift from a textological towards an empirical approach to language implies the presumption of interactional dynamics in which the subject constructs meanings, concepts and other 'linguistic

units' on the basis of her interactive experience with the world. This change in approach requires us to define the object of language study in such a way that either it could be directly observable or observable implications could follow from it and we could empirically test what we hypothesize about this object. The time has come to recognize that "the linguistic universe is populated not by mysteriously unobservable objects called 'languages' but by observable human beings who somehow and sometimes manage to communicate with one another" [Harris & Wolf 1998, 19].

As follows from the epistemological overview of science and scientific method, an object of study is a domain-specific item of observer's experience. In physics, for example, physical objects are those which the subject experiences sensorially in a domain of bodily interactions. In the domain of the linguistic science, it should be a semantic object with which the subject interacts both perceptually and conceptually. Perceptually – in the sense that all our understanding of words comes as a result of our perceptual experience of communicative behaviors as well as the situational setting where these behaviors take place. Conceptually – in the sense that we need to interpret what we see, hear, smell, etc. For the sake of clarity, I will present the structure of this interaction in the following scheme:
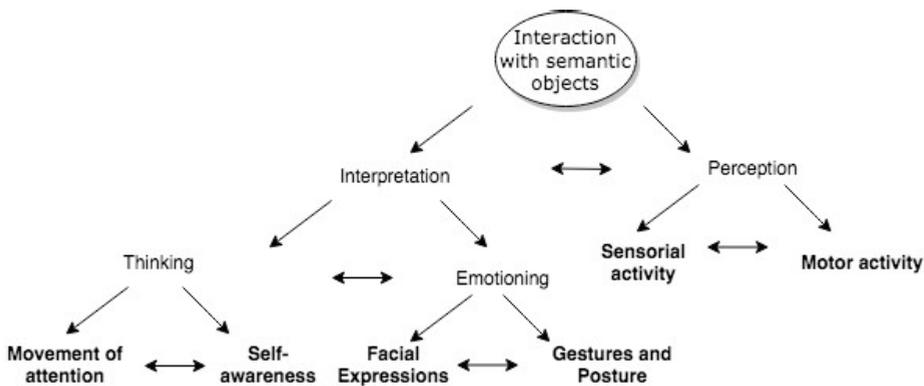
Figure 1. The structure of linguistic interactions

Movement of attention as part of thinking processes implies the dynamics of attentional focalizations on objects both in and outside of the perceptual field. Self-awareness presupposes the history of such focalizations, or, in plain terms, the lived experience which ensures the coherence in the succession of attentional objects and the ability to focus attention on something that is not immediately perceived. Emotioning

[Maturana 2006] is the dynamics of positive-negative evaluation of the results of all interactions with the object. Emotioning implies such observable bodily behaviors as facial expressions, posture adopting and gesturing. Sensorimotor dynamics is a perceptual activity taking place where/when a word is used or linguistic meaning is conceived. Two-way arrows mean that the procedural components of one whole process reciprocate each other and cannot be viewed statically as separate parts.

Another important detail that should be added is the question of choice between different genres of films. Are feature films better than documentaries for a linguistic study? They definitely are, for a reason. Documentaries are by definition based on the ontological assumption of reality as they pursue the aim of showing, or, rather, telling, 'as it really was'. They are aimed at the external (objective) view of events leaving the internal perspective of a subject's experience behind. In other words, the events represented in documentaries are not events as such but, in most often cases, their written (documented) account compiled and interpreted in a particular manner. It means that what we deal with in documentaries is a ready-made history as a text-based record of 'facts' and 'reality'. Conversely, for an insight into a linguistic behavior we need to observe the construction, the process of making of such facts and reality in the mind of a subject.

Does the choice of experimental film, or avant-garde cinema, elevate or diminish the value of empirical linguistic research? In my opinion, this choice concerns the question of representativeness of empirical data, and, to be able to decide upon the research value of non-traditional films, the researcher needs to follow the old-good sociological principle of sampling. The more people are represented by a selected subset, the better. In our case, this should read as follows: the more people find a selected film relatable, the better. This relatability factor is measurable today when we turn to official ratings of popular approval, viewing statistics or evidence of the critics' recognition and audience reception of the film (such as awards, reviews, etc.). Therefore, conventionality or non-conventionality of a film is not something we should first consider when making a choice as long as this choice is well-informed – what counts is representativeness of the chosen film.

Motion picture as a primary source of evidence

As was stated above, linguistics, as long as it is concerned with a study of language as a dynamic and empirically grounded phenomenon, goes

far beyond textology. Texts as analytical products "freeze phenomena in motion", that is why an "extended use" of empirical data may need to involve not only descriptions, but also *depictions*. Films might be those "representational media" which help visualize the dynamics and motion of linguistic interactions [Linell 2005, 220] and whereby offer observational data for language research.

The main reason for this claim is that films are recordings of observable acting upon linguistic objects whose structure I discussed above. Perception, emotioning and even thinking become observable in a motion picture.

Sensorial activity during a linguistic interaction is accessed through audiovisual representation of the subject's hearing, seeing and even feeling (through musical inserts) things happening around at a particular point of time. Motor activity is observed through the visualization of how the subject's body moves and what it does to interact with what is happening around at this point of time including the speech production activity itself. Thinking as what is happening inside the subject also becomes observable in a number of ways. Different filmmaking techniques (e.g. point-of-view shots, flashback, flashforward) can show on the screen how the attention of the subject moves from one experiential object to another at the same point of time when speech production and sensorial activities are taking place. The simultaneity is achieved by a voiceover and a coherent succession of film shots which, when viewed as a whole, make two parts of the experiential world easily distinguishable – the dynamics of what is happening *in* and *to* the subject. Self-awareness as a composite of all the subject's (relevant) lived experience is easily followed as the story develops and can be reconstructed from the events that happened to the subject previously and are causally related to what is happening 'here and now'. This lived experience can illuminate how the subject feels about what she says, does and thinks. Emotional reactions to what is said and emotional expression of what is said are observed in the process of communicative interaction and are often visually emphasized by a film director in close-ups. Thus, it may be concluded that films show us all basic types of a linguistic interaction in the cyclical flow of experience from inside-out and outside-in.

On a larger scale, the use of films as a source of empirical data may meet with opposition mainly because this choice is non-traditional and, as it might first appear, goes against the methodological principles of experimental science. This problem was under discussion in the recent issue of *Constructivist Foundations* [Bunnell 2020; Druzhinin 2020a;

Druzhinin 2020b; Fultot 2020; Scholte 2020], an authoritative philosophy of science journal. The academic debate is representative because it allows almost all the main arguments "for" and "against" to be explicitly formulated. Those who believe films to be unnatural or "impoverished" [Fultot 2020, 83] give the following reasons:

(1) Films are fiction.

(2) Films are pre-made.

(3) Films lack spontaneous causation.

(4) Fictional behavior cannot be observed.

(5) Films are constrained by somebody's imagination.

(6) Films are composite interpretation of experience by several contributors.

(7) Films are not experiments and thus are not a source of empirical evidence.

(8) Films are designed to sell and entertain.

I will present the respective counterarguments explaining why films can be trusted to be a source of empirical data.

Reason (1) deals with the well-known dichotomy of fact vs. fiction in the framework of which it is claimed that whatever is fictional cannot work as evidence for or against something found in reality. However, it is not quite fair to dismiss films as having nothing to do with reality because fictional or 'unreal' is the assessment of the story told in them, not the *way* it is told. While the former always comes as an interpretation (although somebody may describe the plot as totally 'real', especially when it is based on a 'true story'), the latter is something dependent on observation and comes *with* the viewers' observation only. Observation of how the world changes in moving pictures can hardly be unreal and fictional. "Films produce coherent moving pictures that we can relate to our experience because our body moves and/or our mind coheres its movement in the same manner" [Druzhinin 2020b, 97]. Therefore, there are no grounds why the results of this observation cannot be legitimately accepted as 'real' empirical evidence. As was succinctly articulated by Edgar Morin, films are the reality of motion and forms: "The combination of the reality of motion and the appearance of forms gives us the feeling of concrete life and the perception of objective reality. Forms lend their objective structure to movement and movement gives body to forms" [Morin 2005, 118f].

Argument (2) is logically flawed because the fact that films are made before they are shown, i.e. the behavior of actors is carefully rehearsed, does not rule out the fact that this behavior is not worthy of scientific observation. We have many examples of behaviors that must be carefully

rehearsed before being observed by someone (e.g. acting during etiquette dinner). Preparation does not make such behaviors lose (it even helps them assume) the quality of being natural and socially valuable. That is why we do not have any reason to dismiss rehearsed human behaviors as experientially worthless.

The idea of spontaneous causation in (3) rests on understanding causality as part of an observer-independent world. Yet, observation is what is essential for a scientific investigation of the world and observation is impossible without the observer. In films, causation is always spontaneous from the observer's (viewer's) perspective: despite our predictions, we may never be sure how characters will behave and what will happen next.

Claim (4) about the impossibility of observation of fictional behavior [Fultot 2020, 83] contradicts the commonsensical understanding of observability. To be observable is to be accessible to sensorial perception (hearing and sight in the first place), therefore an audio-visually recorded human behavior is meant to be observable by definition.

Claim (5) that films are constrained by somebody's (e.g. the script writer's) imagination (ibidem) does not disprove, but proves my thesis explaining why it is scientifically essential to use moving pictures as data. Constraints of human imagination are the object of a genuine empirical study whose aim is to verify hypotheses about the (cognitive) mechanisms of language and experience construction. If we can observe how people can imagine things, we can obtain data and empirical evidence to test our theories about how people use language, create meanings and participate in sense-making activities.

Similarly, claim (6) about the composite interpretation of experience [Bunnell 2020, 84] is what makes films even more representative data for observation of how human imagination works and experience is built.

Claim (7) is common among those who believe that experiments are the only way to obtain valid empirical data. However, if one looks at it closer, experiments and films appear to share quite a few characteristics. Experiment is an experiential situation organized under controlled, explicitly specified conditions and always relies upon a repeatable procedure. It is not supposed to be "a casual observation on the street" but a carefully selected observation relevant to research objectives [Kosso 2011, 10]. In the same way, the constraints put upon a situation to be filmed are carefully described (even pre-scripted), the situation itself is controlled in accordance with the general principle of story-telling coherence and experiential viability (what is filmed must look the same as what is really happening or could really happen). These factors

make it easy for an observer (researcher) to make an informed choice of what to observe in her empirical research with a view to testing this or that hypothesis. To explain why films are a repeatable experience, Tom Scholte borrows Heinz von Foerster's term "eigenbehavior" referring to the repetitive pursuit of conceptual and phenomenal stabilities (eigenvalues) through conceptual and phenomenal structures (eigenforms) we have generated in this pursuit [Scholte 2020, 83] (Cf. [Foerster 2003, 261f]). He concludes that "[W]hen its central aim to develop and specify repeatable procedures guaranteed to engender consistent phenomenal experiences ... it does not seem unreasonable to designate the enterprise of experimental science *tout court* as the pursuit of eigenbehaviors. The same may be said of mimetic artistic practice" [Scholte 2017, 318].

Reason (8) does not justify the opinion that films are too "impoverished" for an empirical study. Commercial interests underlie many if not all scientific endeavors, especially given that researchers today are generally employed or specially funded by state to do their research in a most comfortable way. Entertainment is one of many functions of films that is not incompatible with the scientific value films may present as a projection of a human's experiential world. The reason is that entertainment and stress-relief practices can often become an object of scientific reflection and investigation in psychology, medicine, philosophy (e.g. philosophy of music).

Thus, the arguments brought from within philosophy of science show that there are enough epistemological grounds to recognize motion pictures as a primary source of empirical data for language studies and a viable alternative to experiments in other scientific disciplines.

A case study:
Empirical investigation of counterfactuals and irrealis

In a case study I will demonstrate how linguistic research can be carried out on the empirical basis of a film. The subject-matter of my research is the grammatical and logical concept of counterfactuals, statements expressing the meaning of unreal situation or contrary-to-fact activities. 'If–would' propositions have long been investigated by grammarians and logicians who mainly presumed the duality of our world (the physical moment of speech vs. the moment spoken of; the actual vs. the imagined situation) and interpreted counterfactuals as

a misrepresentation, logically flawed picture of reality or, in more mystical terms, as unreality, alternative, or possible world. Counterfactuals are thus analyzed in terms of analytic philosophy and logical semantics where little is said about why and how a human behaves the way she behaves when she speaks or thinks in counterfactuals.

The first step of my investigation is to define what I set out to observe and interpret. The object of my interpretation is determined by the logico-linguistic paradigm in which this object 'was born', namely, I will need to proceed from the formal syntactical criteria by which linguists recognize counterfactuals, or conditionals (the so-called "second" and "third" types of conditionals, or statements with the use of a conditional clause and past simple or past perfect tenses of the verb); otherwise, I will not be investigating counterfactuals. The object of my observation though cannot be 'counterfactuality' or 'irreality'. What I can observe is the behavior and operations of a person (an actor) talking or thinking in terms of what I previously defined as counterfactuals. At this stage I am also supposed to have some preliminary hypothesis in mind, and this hypothesis will be that counterfactuals are a special form of understanding time.

The second stage of my empirical research is to observe and analyze what I made explicit before. This requires making an adequate choice of a film where a subject is seen to enact counterfactuals in her experience, i.e. where it is visually observable how the subject's experiential world (her emotioning, perceptual and attentional processes) is changing as she uses counterfactuals. The film suggesting itself for selection is *The Curious Case of Benjamin Button* (2008) where at some point (1:54:00 – 1:56:00) an 'if-it-had-happened-otherwise theme' is depicted from within the reflections of the main character. Benjamin learns about the accident that ruined Daisy's health and begins to think about the sequence of events that caused this accident. I will quote the movie script[1] and mark those events as 1–7:

"A woman in Paris was on her way to go shopping, but (1) she had forgotten her coat – went back to get it [...] Now a taxi driver had dropped off a fare earlier and (2) had stopped to get a cup of coffee [...] The taxi had to stop for a man crossing the street, who had left for work five minutes later than he normally did, because (3) he forgot to set off his alarm [...] And while Daisy was showering, the taxi was waiting outside a boutique for the woman to pick up a package, which hadn't been wrapped yet, because the girl who was supposed to wrap it (4) had

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[1] Quote taken from The Curious Case of Benjamin Button Screenplay by Eric Roth, https://www.goodreads.com/quotes/291367

broken up with her boyfriend the night before, and forgot [...] When (5) the package was wrapped, the woman, who was back in the cab, was blocked by a delivery truck, all the while Daisy was getting dressed. (6) The delivery truck pulled away and the taxi was able to move, while Daisy, the last to be dressed, waited for one of her friends, (7) who had broken a shoelace [...]"

The most interesting thing appears later when Benjamin refocuses his attention on the same events but in the reverse order, and in this refocalization he enacts counterfactuals:

"And if only one thing had happened differently: if (7) that shoelace hadn't broken; or (6) that delivery truck had moved moments earlier; or (5) that package had been wrapped and ready, because (4) the girl hadn't broken up with her boyfriend; or (3) that man had set his alarm and got up five minutes earlier; or (2) that taxi driver hadn't stopped for a cup of coffee; or (1) that woman had remembered her coat [...]"

As we can visually observe, Benjamin's counterfactual way of acting is based on the same attentional objects as the factual way of acting. Nevertheless, two different sequences of attentional objects are observed, and this difference is the attentional direction in which they are built up. The film-making techniques make it possible to visualize Benjamin's attentional flow and we can see that he changes the ordering of events in his mind against the arrow of time. But 'time' in this context does not mean objective or cosmological time: if we start watching the film right at the moment when the second sequence of events is shown, we will not understand what is wrong with this second 'time'. To us, then, the second sequence of events could appear incoherent or strange. Only in comparison with the first sequence will we get the whole picture. Thus, we can assume that here time should be interpreted experientially [Simsky et. al. 2021, 8ff], and Benjamin in his reflection goes against his own linear flow of experience.

The last question is why does this change of direction happen in his mind? The observation and analysis of the character's lived experience, his facial and bodily expression give a definitive answer: the moment of the accident is dramatic, the meaning of the accident is of great importance as it changes Daisy's life forever destroying her ballet dancing career. The negative emotional feedback Benjamin gets from the accident makes him act counterfactually and deal with the drama by changing the negative outcome of the events into the positive. Here we come up to the most important thing which we would never understand without observing. The reverse order of the depicted situation is not only about the change of order, it is about the change of the situation itself. This

cognitive trick is easily observable in this film: as Benjamin refocuses his attention on the events in the reverse order, they *make a difference* to him: Daisy's devastating injury is prevented. This is how an 'alternative reality' is constructed in Benjamin's mind when he changes the negative into the positive.

At the third stage of my investigation, I verify my results of observation and clarify the hypothesis. What I found is that counterfactuals emerge as the reflection of the experiencer upon her own flow of experience as she re-focuses on the same attentional objects as some time before but in the reverse order. This change of attentional direction is at the same time change of value (from negative to positive or vice versa) that helps to compensate for the subject's emotional disbalance caused by this linear and irreversible flow of experience and that becomes her 'counterbalancing reality', a 'better world', or rather, a new type of experience produced in/through an act of reflection. If we analyze the grammatical structure of a counterfactual, e.g. *If I only I had not done such a mistake, everything would have happened differently*, we will see more evidence supporting the hypothesis. Namely, the contrasting negation (*If I had* ... = in fact, I don't have) is how we make a relational change and reverse the experience of some past events, past tense forms specify what kind of the lived experience we are attentionally reversing and the 'future-in-the past' verb *would* frames the meaning of directionality, uninterrupted flow of experience, i.e. the future moving into the past or vice versa depending on the relation of the observer. This verb has a very important constructive function: it is not only a reflection upon the experiential flow, but also a construction of a new experience that usually appears as something 'unreal'.

These are the findings based on the empirical investigation of one motion picture only. Of course, more empirical material is needed to substantiate and refine the attentional model of counterfactuals I have proposed here.

Conclusion

If there is any observer-independent world, it need not and cannot be subject to a scientific investigation because science is a "collection of recipes that work always" [Valéry 1957, 1253] every time we interact with the world as observers. If a human had not experienced radioactivity once, there would be no nuclear physics now. Therefore, it is not the content of things 'out there' that science is concerned with, but how

different aspects of our experience relate to each other both empirically and logically.

Viewed from this perspective, films appear as a useful source of observational data and present a certain scientific value. Opponents on the side of apparatus theory recognize films as an ideological representation of reality, which finds favor with realists who dismiss cinema as an impoverished fiction. However, scientifically valuable is not *what* is told in the story, but how it is constructed in the experience of the observer (film makers, actors, viewers). These mechanisms of imagination, attentional dynamics, bodily behavior and perception, all the building blocks of our experiential world, are enacted, pieced together in the form of recorded moving pictures, projected onto the screen and finally made observable. This observability becomes a methodological opportunity and opens up new prospects for investigating human cognition.

The science which could certainly take this methodological opportunity is linguistics. Faced with the epistemo-logical contradictions of representationalism and textology, dominating language studies now, as well as the problem of primary sources, linguistics finds itself in need of a dynamic, process-oriented approach to language. Upon such a view, language is no longer understood as a self-sufficient system of signs, but the observer's communicative interaction with her experiential world. Such interactional dynamics can be empirically investigated with the help of cinematic observations that could serve as a viable and even better alternative for experimental ones [Scholte 2020] mainly because in experiments we cannot observe other people's attentional flow and lived experience.

The conception of language as experiential dynamics observable in films fits in with the philosophy of radical constructivism [Glasersfeld 1995] and follows the theoretical tenets of enactivism [Varela et al. 1993] according to which a human by analogy with an actor *enacts* the world as a (biological, social and cultural) history of her previous actions, these enactments becoming the world itself. However, the novelty of the approach to cinema and visual semiotics also lies in the methodological treatment of films from the perspective of second order science (science about science).

In practice, some scientific endeavors to use films empirically in language studies have been undertaken in Druzhinin [2020a, 2020b] where the grammatical concept of irreality in counterfactuals is viewed as experience. It was found that this experience is enacted through the reversed flow of attention being refocused on those perceptual distinctions whose value changes from negative to positive or vice versa.

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