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Do gestures have meaning? An empirical analysis on the gestures performed by Fidel Castro at the United Nations

¿Los gestos contienen significado? Un análisis empírico de los gestos realizados por Fidel Castro dentro de las Naciones Unidas

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Abstract

In everyday conversations, there are said to be unconscious meanings that we convey through our body. For example, if a story is being told, our hands move according to the message, following a rhythm and forming shapes that we are unaware of. According to McNeill (1992), gestures are a form of language different from speech, but even though they have been regarded as individual entities, they are, in fact, parallel and work in synch with each other. This is the scope of the analysis of gestures. In the following paper, the objective was to test whether there is an association between gestures and meaning. Consequently, the gestures of former Cuban president, Fidel Castro, were extracted and analyzed from his intervention at the United Nations in 1979. The process of annotation was carried out on the program ELAN, based on a series of categories: the type of gesture and topic, the position and movement of both arms and hands as well as the orientation. Additionally, a series of quantitative and qualitative analysis were performed through the statistical program R. A Chi-squared test showed a significant relationship between the type of gestures and the topics which was further corroborated through a conditional inference tree and a multiple correspondence analysis, reaffirming the idea that these are form-meaning pairs. Moreover, there was a strong connection between the type of gesture and arm movement, suggesting that this is due to the intention of the message while the orientation of the hand was a clear indicator of arm movement.


Keywords: gestures, discourse analysis, politicians, meaning, association

Resumen

Se dice que existen significados no intencionales que se transmiten a través de nuestro cuerpo dentro de nuestras conversaciones diarias; por ejemplo, nuestras manos se mueven al compás del mensaje, siguiendo un ritmo y creando figuras de forma inconsciente cuando se relata una historia. De acuerdo a McNeill (1992), los gestos son una forma de lenguaje ajeno al habla, pero, a pesar de que se han tratado como entidades individuales, en realidad trabajan de forma paralela y en sincronía. Este es el alcance del análisis de los gestos. El objetivo de esta investigación fue comprobar si existe una asociación entre los gestos y el significado; por ende,

se extrajeron y analizaron los gestos del expresidente cubano Fidel Castro los cuales fueron capturados durante su intervención en las Naciones Unidas en el año 1972. El proceso de anotación se realizó con ayuda del programa ELAN con base a una serie de categorías que incluyeron los tipos de gesto y de tema, la posición y movimiento de ambos brazos y manos, así como su orientación. Adicionalmente, se realizaron unos análisis cuantitativos y cualitativos dentro del programa estadístico R y, a través de un test de chi al cuadrado, se demostró una relación significativa entre los tipos de gestos y los temas, la cual fue corroborada por un árbol de inferencia condicional y un análisis de correspondencia múltiple. Todo ello reafirma la idea de que estas dos variables crean pares de forma y significado. A su vez, se halló una fuerte conexión entre el tipo de gesto y el movimiento de los brazos lo que indica que es causal de la intención del mensaje mientras que la orientación de las manos es un indicador del movimiento del brazo.

Palabras clave: gestos, análisis del discurso, políticos, significado, asociación

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INTRODUCTION

There is more to speech than meets the eyes. Every time we carry on conversation, we convey side meanings that are either conscious or subconscious. We hardly ever pay attention to the way we move our hands or body while uttering meaningful sentences. Therefore, are those gestures part of a more complex pathway of meaning? If so, what exactly do they mean? This is the general scope of the analysis of gestures.

To analyze these underestimated movements, a political speech has been chosen since politicians ought to use their body carefully to accomplish the goal of their message. Politicians represent a great source of information for they either receive training on the subject or they get carried away while addressing an audience. This paper will examine the gestures made by one of the most influential politicians in Latin America: Fidel Castro. He was well-known for his exaggerated movements while addressing people as he hardly ever held back anything in terms of spoken words or gestures.

There are many famous speeches given by Fidel Castro, but this paper will focus on the one presented at the United Nations on the 12th of October 1979. The strength of his conviction and the power of his words made this speech one of the most memorable in his political career. Castro was a man with a sharp tongue, so he barely restrained himself while addressing anyone. He was a man equally loved and hated but, despite this, his commitment to his country and yearned for freedom for his people still echo in Cuba.

Firstly, this paper lays the theoretical foundation to understand the objective of this analysis. It will provide several concepts on gestures for the reader to have a better understanding of the topic. Secondly, it will describe the process involved and the programs that were used to analyze the data. Thirdly, we will point out some of the major findings in the associations we expect to obtain, so the discussion will be accompanied by the introduction of statistical methods, graphs and their results. Throughout the whole paper, previous literature will accompany the flow of the reading to support the ideas presented here in order to give sufficient weight to the claims made in the sections throughout the sections. Lastly, final remarks will be part of a conclusion which addresses the issue of the lack of studies in this area. Additionally, areas of improvement will be suggested so that the linguistics debate can continue.

Gestures

When someone is involved in a conversation, their body is consistent with the message they want to convey (Cienki and Müller, 2014, p. 1768). Some speakers are aware of this phenomenon, so they restrict themselves to only use their body to emphasize a part of the speech; others exaggerate their movements which occasionally distracts the main channel of communication. Nevertheless, these conscious or unconscious movements must mean something other than just flicks of the hands. Thus, "gesture is one important way to focus the addressee's attention on the visible context of an utterance" (Fricke, 2015, p. 708).

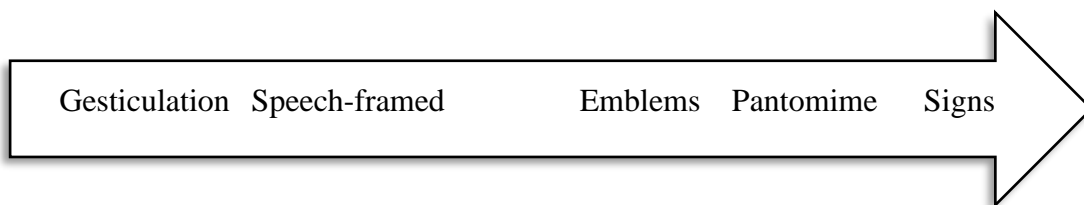
As David McNeill (1992) explains, "the word 'gesture' covers a multiplicity of communicative movements, primarily but not always of the hands and arms. Often, gestures are assumed to comprise a channel different from speech, but careful investigation challenges this traditional view" (p. 1). This implies the following points: firstly, hand and arms are said to be the prototypical gestures in speech; thus, facial expressions, body movements, lips, etc., are said to revolve around these central gestures. Secondly, and most importantly, traditional views on this topic have regarded language and gestures as two separate entities. However, these two concepts are

also said to be associated in different ways so that one accompanies the other to form one entity of meaning in the process of communication; this will be the goal of the paper.

Based on the work of Adam Kendon, McNeill (1992) addresses Kendon's classification and renames it as "Kendon's Continuum":

Figure 1

Classification and renames



There are two reciprocal changes that occur as one moves from left to right in the continuum: first, the degree to which speech is obligatory reduces, and secondly, the properties of a language increase. In other words, Gesticulation requires speech to make sense of the message as opposed to signs, for example. Additionally, the latter can be regarded as a language in itself since signs carry meaning on their own, as in the case in, for example, American Sign Language.

Apart from McNeill's interpretation of Kendon's work, researchers agree on a broader scale of gestures. On the one hand, emblems have been found which are the equivalent of words; that is, they carry meaning in themselves without the use of accompanying speech (De Ruiter, 2003, p. 338; Matsumoto and Hyi Sung, 2013, p. 78; Sonneborn, 2012, p. 13). One of most common examples belongs to the realm of insults: the middle finger carries a negative meaning and as a result, words are not needed to understand it.

On the other hand, there are illustrators which are linked to words that highlight and stress the message (Matsumoto et al, 2013, p. 76). These speech illustrators can be further divided into five categories (De Ruiter, 2003, pp. 338-339; Kühn, 2002, p. 165; Matsumoto et al, 2013, p. 76):

Iconic gestures or pictographs: "Such gestures present images of concrete entities and/or actions" (McNeill, 1992, p. 4). That is, they resemble the shape of real or abstract referents. For example, when a person uses their hands to describe the shape of an object.

Ideographs: They "only refer to abstract referents. They diagram the logical structure of what is said" (Roodenburg, 2001). An example could be when a speaker tries to shape the concept of intelligence.

Deictic gestures: They are also known as pointing gestures and their representation is straightforward; they show location or direction through prototypically, the use of the index finger.

Pantomimic: They also have the name of kinetographs. These gestures are used when the speaker 'acts out' activities. An example is when a person imitates the activity of swimming.

Beats: These gestures are also known as batons; they accompany the speech in a rhythmic way to show stress and importance.

It is clear that the scope of study could take different directions, but this paper will focus on the second classification provided above; that is, illustrators. Additionally, since hands and arms

accompany these movements, they will also be part of the analysis (Matsumoto et al, 2013, p. 81; McNeill, 1985, p. 351).

Gestures of Politicians

Political communication can be understood as any type of communication which involves politics. Dominique Wolton (1998, p. 31) defines it as the interaction between information, politics and communication which are the foundations to legitimize a rightful democracy. Therefore, political speeches must be organized and adapted to both the media and the audience. Their goal has always been to persuade the audience and create a positive image of the speaker (Caramelo Pérez, 2015, p. 29).

As briefly mentioned in the introduction, the purpose of this paper will be to analyze the gestures made by politicians. They represent a great source of fruitful research since their speeches are representative of their persona and are targeted at large audiences. Thus, this presupposes a careful thought of body movements. There are a few political figures who seem to go with the flow of their words resulting in an effect on the stability of their movements. One of those figures was the controversial Cuban president, Fidel Castro.

Fidel Castro was known for his lengthy speeches; in fact, he is said to have given the longest timed speech at the 82nd plenary meeting of the General Assembly of the United Nations (DAG Hammarskjöld Library, 2017). However, this paper will focus on the speech given on October 12th 1979 to the General Assembly of the United Nations (Renraku87, 2012). In his speech, he emphasized social inequality while addressing topics related to peace and democracy. In addition, he emphasized that all nations should have a common fight: the right to have a better life and human dignity (HispanTV Nexo Latino, 2016).

METHODOLOGY

After having selected the appropriate speech, the process of annotation began. This was effectively done through the program ELAN (cf. <http://tla.mpi.nl/tools/tla-tools/elan>, Max Planck Institute for Psycholinguistics, The Language Archive, Nijmegen). A total of 1508 annotations was analyzed in terms of certain categories.

To begin with, the type of gesture was annotated. The categories belonged to the ones presented earlier, which include Beat, Deictic, Iconic, Ideographic, Pantomimic and, where there was no gesture, the control category N (that is, as having No Value). Having seen the video and read the transcript, categories for Topic were extracted: Transition was coded for gestures which were used prior or right after the subject uttered a sentence or word, or when he made a pause; Country was used to signal any mention of a country; Negative was used to code negative connotations such as 'war'; Number was used when he mentioned any number; Subject, when Fidel Castro referred to a physical or abstract referent; Order was used to signal imperative sentences; and finally, Environment was used to code topics related to global warming, environment, and so on.

After these categories had been annotated, the position and movements of both arms and hands were coded. Two categories were created for this part: synchronous and asynchronous. Then, the arms were annotated on different categories: Wave aside, when they moved sideways or away from the body; Open, when it resembled the action of opening a door; Bent, when the arms were not straight but bent by the elbows; Hanging, when there was no gesticulation so they remained loosely; and Pointing, when Fidel Castro used his arms to point.

Hands were also annotated: for the variable position, hands could be categorized as Fist, Open, Together (when they held each other), Holding (when they held the podium or his sheets), Pointing

(when Fidel Castro used them to signal), Relaxed, and N (having no value, in cases where it was impossible to determine their position). The orientation was also annotated; therefore, the categories included Up (when the palm faced the ceiling), Down (when the palm faced the floor), Towards (when both palms faced each other), In (the palm faced the speaker's body), Front (the palm faced the audience), and N, when it was unable to be categorized.

RESULTS

After having annotated the speech given by Fidel Castro, it was possible to conduct a quantitative and qualitative analysis of the data. This was done by means of the statistical program R (R Core Team, 2016).

Firstly, it was tested if there is an association between the type of gestures and the topics in the speech. To test this, a Chi-squared test was performed which resulted in a significant association between these two variables: $\chi^2(1): 746.8, p < 0.05$. However, how strong is this association? A test of strength of association was run through the 'VCD' package (Meyer et al, 2016):

Table 1

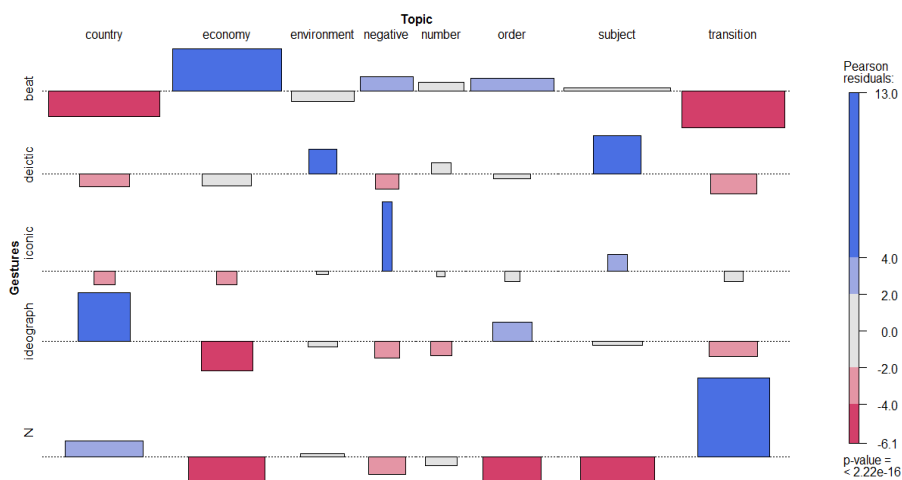
Chi-squared test

	X ²	df	P(> X ²)
Likelihood Ratio	649.20	28	0
Pearson	746.85	28	0
Phi-Coefficient	: NA		
Contingency Coeff.:	0.575		
Cramer's V	: 0.352		

Since the data is large, Cramer's V signals that we have a moderate effect size. Moreover, since the χ^2 is fairly high, it was worth looking at the data again to find which categories make a positive contribution to the effect size:

Graphic 1

Association plot between Gestures and Topic

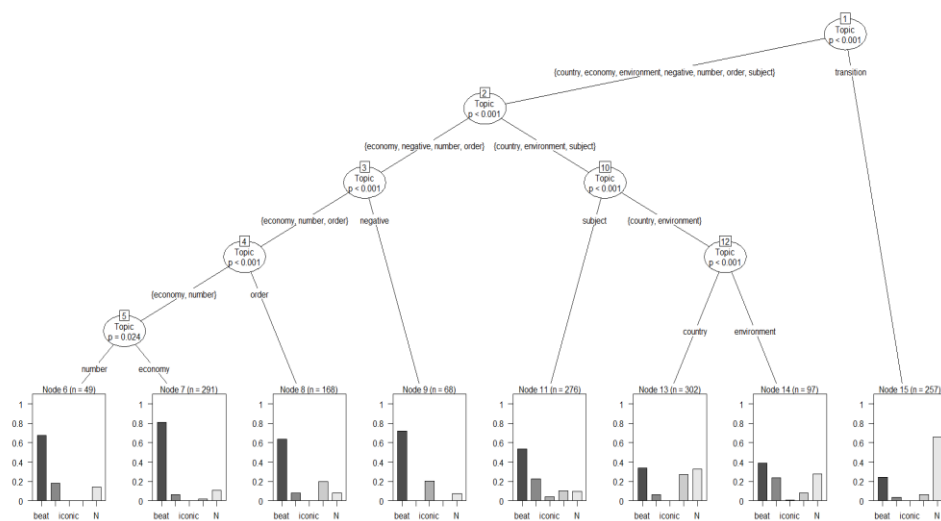


We see that the topic environment does not make a positive contribution to our effect size. This is because there are very few annotated instances of this topic in the entire data. Additionally, we see that economy/beat and transition/N are the most prominent since they are higher than we would expect. For the category deictic, we see more instances of the sort and a few more in each of the other types of gestures.

Despite having significant p-values, we received a warning message that there were not enough observations in some of the categories. For that reason, we needed to corroborate the results. Hence, a conditional inference tree and a multiple correspondence analysis were performed made possible through the numerous potential predictors.

Graphic 2

C-tree between Gestures and Topic

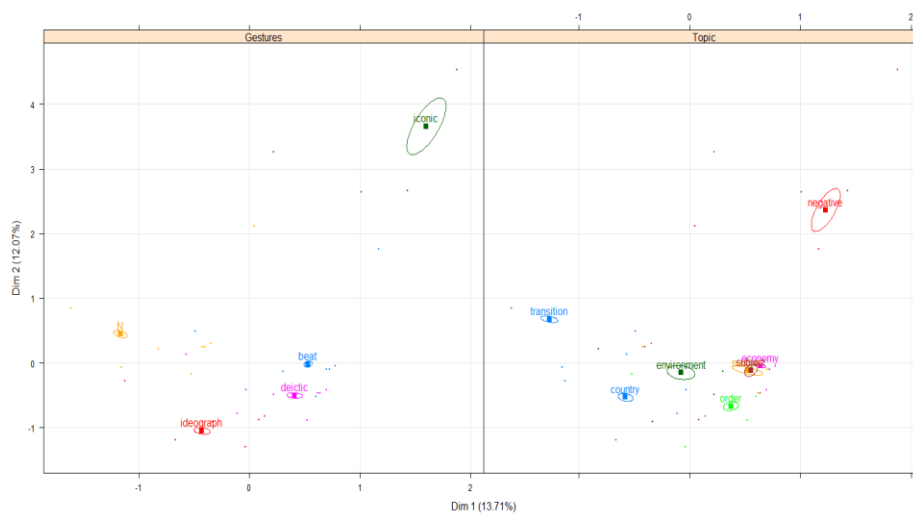


The C-tree's null hypothesis is based on the assumption of independence between the input and the predictor variables. The first split is between the topic transition and a group involving the rest of the categories. The node of transition has 257 observations where the accompanying gesture is N; that is, a gesture that was coded as having no value. This illustrates the movement of Fidel Castro that is presented later in Figure 4. The left branch of this first split, on the other hand, presents more nodes and branches. We see a second split in node 2 between the group economy, negative, number and order and a second group where country, environment and subject are involved. Let us first explore the left branch: there is a split between a new group (economy, number and order) and the topic negative. The latter's instantiations add up to 68 and, interestingly, this topic uses the most iconic gestures, but notwithstanding, beats make up most of the data. Node 4 is further divided where order (node 8) amounts to 168 observations. Node 5 is split into number (node 6) and economy (node 7). What is interesting about the left branch is that all the nodes are accompanied almost entirely by beats. The right branch of node 2 illustrates a split between the group country and environment, and subject. The latter has 276 observations, and it has beats as the primary type of gesture followed by deictic in almost the same proportion as the rest of the categories. Finally, we see a split between environment and country, in which the former has 97 observations and the latter 302. Although these numbers do not represent a marginal difference, it is interesting to note that these two categories have marginal differences between the type of gestures that accompany them. Country has the same proportion of beats and gestures coded as N, followed closely by ideographs. The topic environment has a preference for beats, but deictic and N have almost the same proportion, to the point that the difference between the two is marginal. What we can conclude from this C-tree is that there is an association between the type of gesture and the topic. At the same time, beats are the gesture which that accompanies nearly all the categories of topic apart from transition.

Furthermore, the Multiple Correspondence Analysis plot yields interesting associations:

Graphic 3

Multiple Correspondence Analysis (MCA) between Gestures and Topic



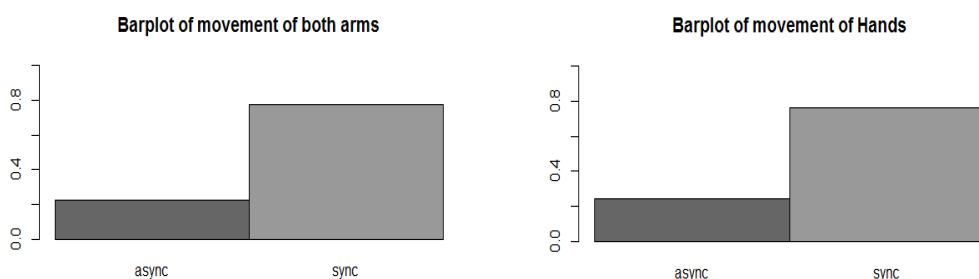
We see that the type of gesture N floats around the same area as the topic Transition. This is not surprising since a great deal of such examples was coded under those particular labels whenever Fidel Castro returned to a neutral position during a pause or right before he continued with his next sentence. We also see that topics economy, subject and number create a group that clusters around the type of gesture beat. Therefore, these three topics are highly associated to this

movement. Deictic movements float around the same area as the topic order, which could potentially signal an association between the two; in fact, this type of topic was used with both deictic and beat movements. This explains why these two cluster around the same area and could potentially signal that they form a pair. As for the other categories, they are not associated or have a low association level as in the case of iconic gestures and the topic negative. Ideographs seem to prefer the topic country whereas environment approached the pair of beat and deictic movements.

The proportion of movement of both arms and hands were calculated, as well as their respective barplots to visualize the data:

Graphic 4

The proportion of synchronization of movement in both arms and hands



We clearly see Fidel Castro’s tendency to use synchronous movements. But this must be taken with a grain of salt because when he did not move his arms or hands, they were annotated as synchronous as it could be said that such activity of arms and hands was performed equally. His arms and hands remained unmoved, held the podium or just laid bent with the palms facing downwards during a great deal of the beginning of his speech. As the message began to unfold, he made more asynchronous rather than synchronous movements.

Figure 1

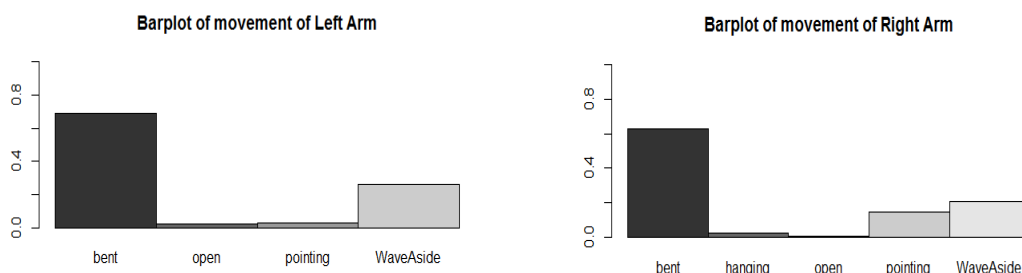
Asynchronous movement (left photo) and synchronous movement (right photo)



Additionally, it is worth looking at the specific movement of both arms. For that reason, their respective proportions and barplots were also created in the statistical program R:

Graphic 5

Barplots showing the proportions of movement of both arms



The results reveal that Fidel Castro used bent movements very nearly at the same level in both arms: 69.1% for the left arm versus 62.8% for the right arm. This slight difference reflects the fact that he used his right arm more often than the left: the latter remained almost continuously holding or facing the podium while the right performed different movements. This is supported by the variation in movement in the right arm to the point that the category hanging appeared to a lesser degree (2.05%). The category Wave Aside was marginally greater for the left arm which represents the movement which we consider to be one of his neutral positions.

Figure 2

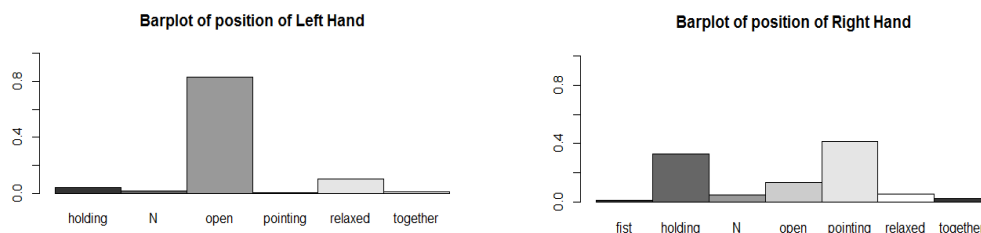
Continuum of Fidel Castro's neutral position



When it comes to the position of the hands, we see more variation in the following visualizations:

Graphic 6

Barplots showing the proportions of the position of both hands



This time, it is clear his preference for the right limb. The left hand has a strong preference for being open whereas this category comes third after the others in the right arm with only 13.2%. Again, the left arm/hand is almost static. Interestingly, we see more variation for the right hand. Fidel Castro has a strong preference for this extremity which could signal that he is right-handed. Moreover, we see how the category pointing has a great deal of observations, resulting in 41.1%. Curiously, the category fist appears only in 0.72% of the total from the right hand, and it belongs to the variations he made to the type of gesture beat.

Figure 3

Different types of beats performed by Fidel Castro: Index (left photo), fist (middle photo) and open hand (right photo)



An association between the type of gesture and the movement of both arms was also tested. The results were significant for both arms: For the left arm, we obtained a $\chi^2(1) = 88.7$, $p < 0.05$; and for the right arm, $\chi^2(1) = 90.4$, $p < 0.05$. Both p -values are below our significance level; therefore, it shows an association between the two variables. Unfortunately, we also obtained a warning message after running both chi-squared tests, so it was decided to perform their respective association plots and conditional inference trees (figures are found in Appendix 1).

Interestingly, we see that the variable that has the strongest association is Movement of Left Arm. The first split at the top divides the categories pointing, wave aside from bent and open (node 1). The left branch is split into two branches (node 2): on the one hand, gestures with bent and hanging movements (node 6) which have a total of 283 observations. These movements are represented by gestures of the type beat and where no gesture was coded, while beats and ideographs have a marginal difference in proportion. On the other hand, we find a new node for movement of left arm (number 3) which is further divided into two new branches: wave aside (node 4) and pointing (node 5). The former has a total of 141 observations, and it is represented by gestures which were coded as N, whereas the latter has only 11 observations and is highly distinguished by beats. On the right side of the tree, node 7 is split into two branches again: hanging and pointing (node 8) with a total of 181 observations and represented by beats; and node 9 is further split into bent (node 10) with a total of 681 observations, and wave aside (node 11) with a total of 211 observations. We see a preference for beats in nearly all the bar plots which represents one of the most used gestures by Fidel Castro to accompany his speech. This is followed by gestures that were coded as N, which reflects the tendency of the left arm to be static with movements attributed to his neutral position.

Finally, we wanted to test if there is an association between the position and orientation of hands. Our data was introduced once more in R and the results are as follows: for both conditions, we obtained significant outcomes. The left hand yielded a $\chi^2(1) = 675.14$, $p < 0.05$ whereas the right's outcome was $\chi^2(1) = 1035.6$, $p < 0.05$. In both situations, we get extreme χ^2 , but most importantly, we again received a warning message due to insufficient observations in some categories. This

prompted us to run their respective association plots and their classification trees (figures can be found in Appendix 2).

For the left arm, the association plot shows that the categories that are higher than we would expect belong to in/holding, N/N, down/open, up/pointing, relaxed/in, relaxed/N and together/in. In contrast, the right arm shows more categories; still, the most representative categories belong to open and relaxed. We see that the category front and up poorly contribute to the effect size but only the latter parallels the contribution of the left arm.

In regards to the C-trees, let us first look at the results for the left arm. The first split at the top divides the orientation which was coded as having no value (N, node 2) and the group of down, in and up. Node 2 has a total of 36 observations which are represented by the positions of hand open and N. The difference between the two is marginal and not surprising since N was used to code observations where it was unable to describe both position and orientation. The right branch is split in two branches: node 4 for the orientation down and up, whose total number of observations is 1339; and node 5 for the category in, with a total number of observations of 133. The latter prefers relaxed positions which correspond to the neutral gesture of Fidel Castro. However, this preference is marginal since relaxed and open in this node have almost the same proportions. The rest of the nodes have a strong preference for open which does not come as a surprise since the left arm hardly ever moved or remained neutral.

The C-tree corresponding to the right arm shows more nodes and variation. The first split at the top divides the group of down, front, N and up and the group of in and towards. Let us explore the right branch first as it only has three nodes. Node 7 is split into two branches: towards (node 8) with 349 observations and in (node 9) with a total of 372 observations. We see that this difference is marginal and how both have a strong preference for pointing movements. This matches the beat movements of the right arm, during which he had his hand open, as well as matching the movement of wave aside, which is involved in a continuum of gestures where the hand faces the audience at the beginning, then faces the left hand, and finally the background. The second node is split into two branches which separates node 3 (orientation N, having no value) and the group of down, front, up. Node 4 is split into the pair of front and up (node 5) with a total number of observations of 31; and node 6, corresponding to orientation down, with a total of 643 observations. Node 6 has a strong preference for the position holding which illustrates the neutral position when Fidel Castro held the podium, whereas node 5 prefers an open position of the hand. This exemplifies the gestures where Fidel Castro extended his arms with the palms facing the ceiling (see figure 5, right photo) and where he had his arm extended with the palm facing the audience, while waving it rapidly to signal that he disagreed or to represent the word 'No'.

DISCUSSION

An association has been found between the type of gesture and the topic in Fidel Castro's speech. Though the Chi-squared test showed significant results, they needed to be corroborated through a non-parametric test due to the lack of observations in some categories. A conditional inference tree and a MCA showed significant results overall, but once the MCA was analyzed, we see that not all the topic categories were associated with the dependent variable. Still, such a result reflects the idea that gestures and topic are form-meaning pairs.

Another contributing factor for Castro's exaggerated movements might have to do with the country in which he was born. It has been suggested in the literature that people from warmer countries tend to gesture more (Calero, 2005, p. 114). Therefore, the passion that runs in Latin America might be parallel to the way they gesture. This, of course, needs further research.

While annotating his speech, it was fascinating to notice that Castro emphasized syllables. Almost all the beats he performed accompanied the syllabic rhythm of the words in his speech. It would be interesting to further explore the frequency of these movements as well as the kind of beats which he prefers to use when stressing syllables or complete words, as was pointed out in figure 9 where he used three different beats. Castro also used more personal space when gesturing. His movements were greater, occupied more space, and at times seemed more threatening; that is, his body usually moved forward while his hand shook rapidly.

There was also a relationship between the type of gesture and arm movement. Interestingly, the analysis yielded significant results which allow us to support the idea that the movement of arms is influenced by the intention or intended result of the gesture; that is, they support words and facilitate and form the basis of successful communication (Sollmann, 2013, p. 49). At the same time, we tested if there was an association between the movement and orientation of hands. Again, there were significant results, so the orientation of hands influences the movement of arms.

We also pointed out Castro's tendency to use his right arm almost exclusively to gesture. In some websites, it is stated that he was left-handed, but this information is false and has been considered one of the myths surrounding his persona. "Castro is biologically right-handed," reported the writer Carlos Alberto Montaner after interviewing Carlos Franqui, who fought side-by-side with Castro during the Revolution in Sierra Maestra (Escribano, 2003). This urban legend gained strength since Castro used to hold his cigar with the left hand. In the quantitative part of this paper, we noticed that the left arm remained almost unmoved; still for both arms, the bent category stood out. The right arm showed more tendency to be used extensively with different gestures, but beats were by far the ones he preferred the most. The position of this arm also showed more variation as it was not only used to point but remained open or holding either the podium or his printed speech; still, the arm remained hanging after a number of beats.

CONCLUSION

The topic of gesture analysis is fascinating and enlightening. Every person moves their hands and arms differently when they are involved in communication; hence, the desire to know the function of these intriguing body movements. Is there a relationship between the meaning and them? Do they simply accompany the message without any relationship? That is the purpose of this paper and the literature of gesture analysis. The literature on this topic is still new and therefore still being developed. Therefore, more research needs to be carried out in the different realms where gesture appears: TV presenters, politicians, everyday speech, teaching environment, and so on.

Fidel Castro has posed a challenge on this topic since he exaggerated his movements when speaking. Coding and annotating his speech were difficult, but still, it has offered more areas of analysis. While the results have been interesting, it would be fruitful to compare it to another speech that he gave. At the same time, his interviews might be interesting to look at and see how threatening and dominant his gestures were when answering questions.

Another area that could be exploited is to compare his movements to those politicians who belong to the same school of politics: Hugo Chávez, Che Guevara, Nicolás Maduro, Evo Morales, just to mention a few. The impact that he had on Latin America is undeniable, and that might be reflected on the way these former and current presidents portray themselves. Outside the American continent, it might be interesting to study if there is a relationship between Fidel Castro and Adolf Hitler. Are their gestures a tool to gain control over the audience? Are there social factors that could trigger these gestures? These topics could expand the scope of this paper.

Love him or hate him, Fidel Castro was and remains one of the most influential politicians in Latin America. Studying his gestures has been of much interest because it has revealed insight into what he prepared in his equally famous speeches. This paper is by no means the definite conclusion, so it encourages others to continue working on many aspects of his gestures in order to verify and corroborate the findings that are presented here.

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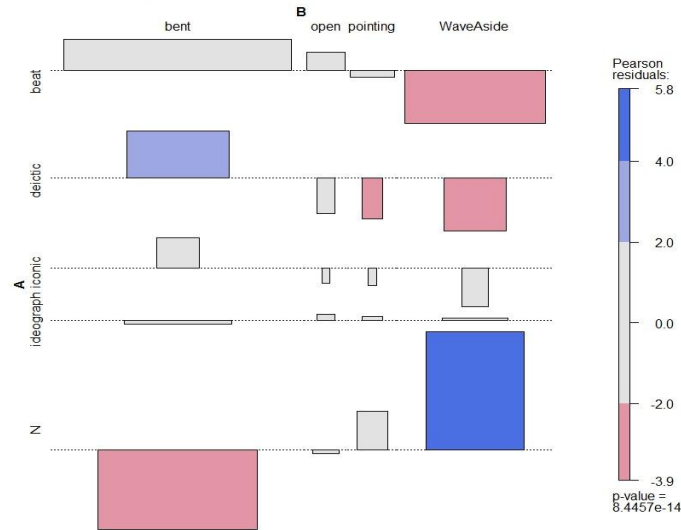
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APPENDIXS

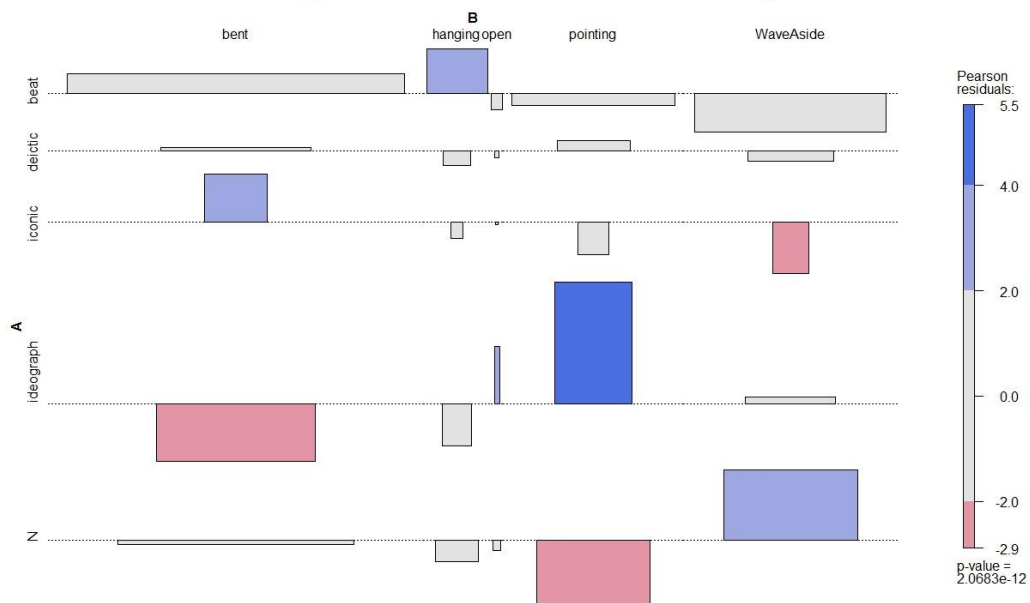
Graphic 1

Association plot and Conditional Inference Tree between Gesture and Movement of Both Arms

Association plot between Gestures and Movement of Left Arm

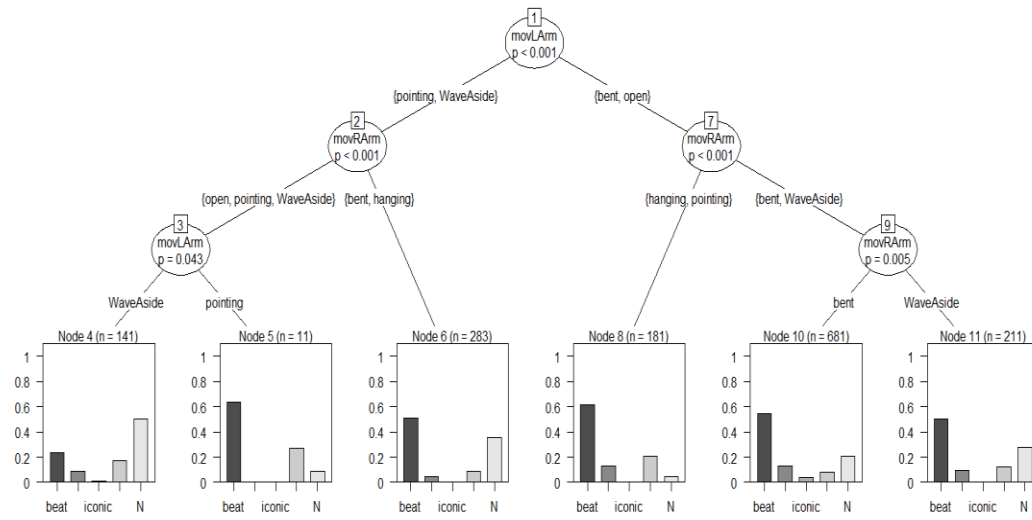


Association plot between Gestures and Movement of Right Arm



Graphic 2

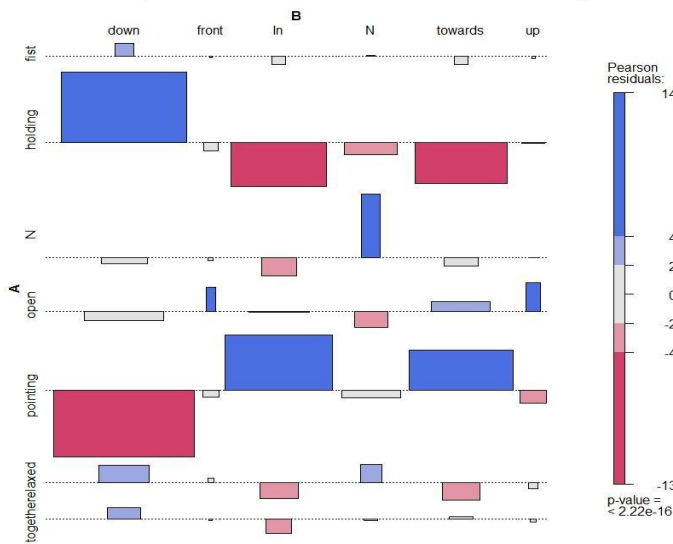
Conditional Inference Tree between Gesture and Movement of Both Arms

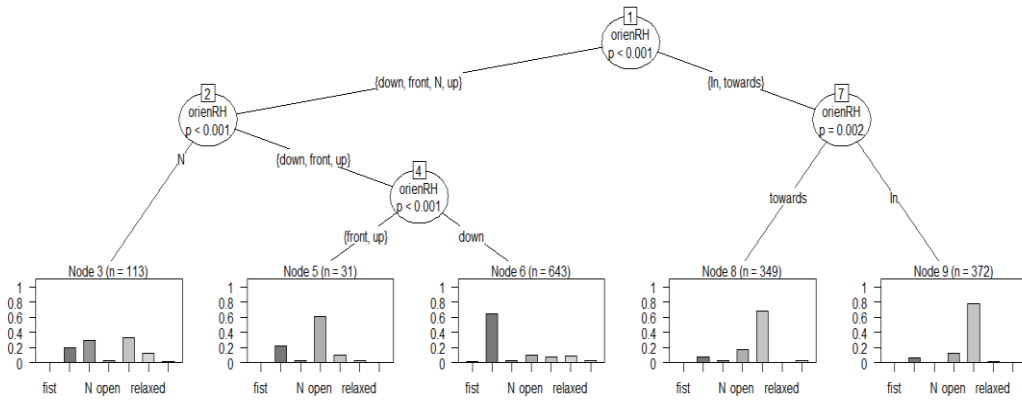


Graphic 3

Association plot and Conditional Inference Tree between the Position and Orientation of the Right Arm

Association plot between Position and Orientation of Right Arm





Graphic 4

Association plot and Conditional Inference Tree between the Position and Orientation of the Left Arm

Association plot between Position and Orientation of Left Arm

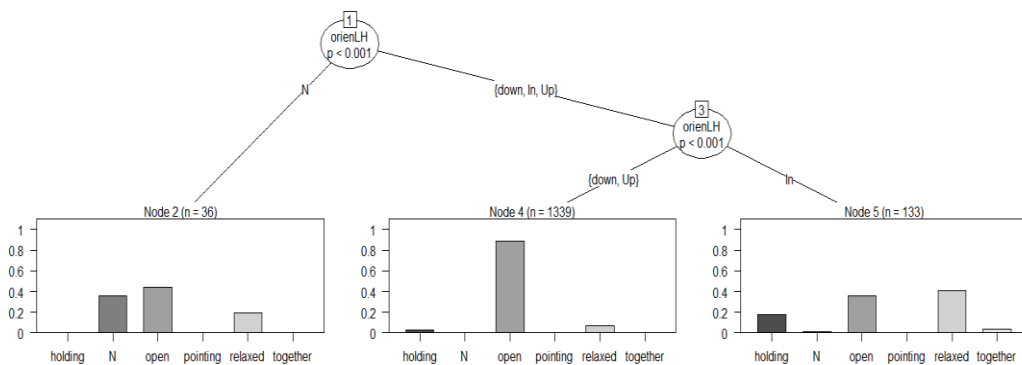
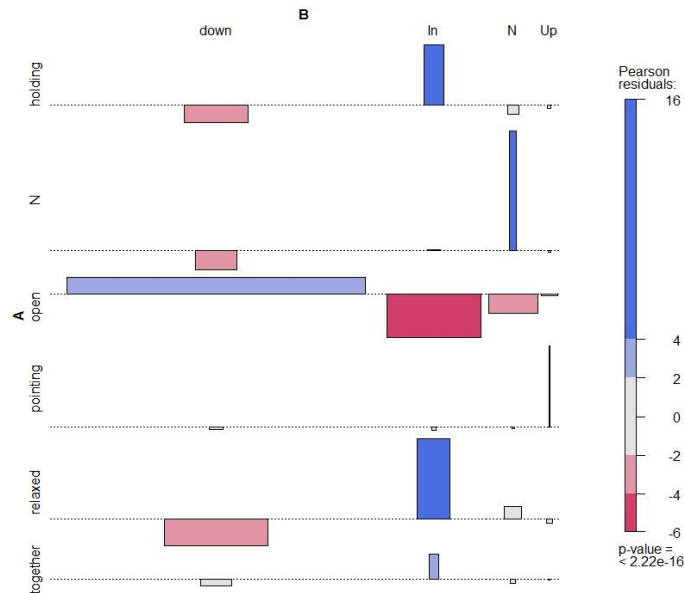


Table 1

Coding system

Gestures	Topic	MovBothArms	MovH	OrienLH/OrienRH
Deictic	Country	Async	Async	Down
Iconic	Environment	Sync	Sync	Front
Beat	Order			In
Pantomimic	Negative	MovLArm/MovRArm	PosLH/PosRH	Up
Ideograph	Number	Bent	Fist	Towards
N: No gesture	Subject	Hanging	Holding	N: No gesture
	Transition	Open	Open	
		Pointing	Pointing	
		WaveAside	Relaxed	
			Together	
			N: No gesture	