CHAPTER 13.

DEPICTING VISUAL ARGUMENTS: AN "ART" APPROACH

LEO GROARKE

Abstract: Twenty years after the publication of the first papers on visual argument, this essay provides an account of visual argument which reflects what we have learned from the subsequent discussion. It proposes an approach to the analysis of visual arguments that identifies their key components and depicts their structure. The same methodology can more broadly be applied (to purely verbal or other kinds of multimodal arguments), providing a systematic way to analyze all instances of argument. I propose it as one part of an "**ART**" approach to argument which acknowledges visual arguments and provides us with a way to represent their contents and test their strength.

Twenty years after the publication of the first papers on visual argument (Groarke 1996; Blair 1996), this paper presents a state-of-the-art account of visual argument and its place within informal logic and argumentation theory. It reflects what we can learn from the discussions of visual argument that have occurred over the intervening years. I will call the informal logic I develop **ART** for mnemonic reasons that emphasize its three constituent parts – parts I will label **A**, **R**, and **T**. **A** is an account of arguing which

is designed to ACKNOWLEDGE visual and other non-verbal (multimodal) argument components. **R** is a method that can be used to REPRESENT the components and the structure of visual arguments. **T** is a set of tools that can be used to TEST visual arguments in a way that determines whether they are weak or strong.

Though the ultimate goal of informal logic and argumentation theory is argument assessment (**T** in my theoretical tripod), I will leave this aspect of **ART** for discussion elsewhere. In this essay, I will provide an acount of argument that acknowledges visual arguments (**A**), though my primary focus will be the development of the second component of **ART**, i.e. the development of a method of representation (**R**) which can be used to represent the content and structure of a visual argument. The method I propose builds upon well established ways of analyzing and diagraming verbal arguments and extends them in way that can be applied to visual arguments (and other modes of arguing). It aims at ease of application at the same time that it dramatically expands our ability to analyze and represent the arguments that occur in real life arguing.

2. SOME PRELIMINARIES

I understand an argument as an attempt to justify a *conclusion* (a point of view) with *premises* that give us reasons to believe it is plausible, likely, true, acceptable, certain, etc. So understood, arguments are instances of reasoning that arguers use to support a point of view (which may be the view that some other view is mistaken). They may do so by citing physical evidence in its favour (as in "There are fresh footprints in the snow, so someone walked here recently.") or some thought or idea that supports it (as in "They are too angry to listen right now, so we shouldn't waste our time trying to talk to them."). As rhetoric and dialectics emphasize, instances of argument play a central role in attempts to convince an audience or interlocutor of some point of view,

but I take their core function to be more fundamental: to establish and provide support for what we can justifiably believe.

A visual argument is an argument with premises and/or a conclusion which are in some important way visual and not verbal. In visual arguments, what matters is not (or not merely) what is said in words, but what we *see* when we look at their non-verbal visual components. The latter may be gestures, photographs, illustrations, video, maps, graphs, cartoons, sculpture, architecture, pictorial signs, or other visual phenomenon. In most cases, visual arguments have verbal as well as visual components. In many cases, the interplay between them is a key element of an argument.

Some commentators (Fleming 1996; Johnson 2005; Patterson 2010) have rejected the idea that there can be visual arguments. I will say something about their views shortly. At the start of an essay on the current state of our understanding of visual arguments, it is more important to say that their doubts have not stopped the emergence of a growing literature focused on visual arguments and their analysis. This literature has been chronicled, added to, and discussed in Kjeldsen 2015; and in three special issues of *Argumentation & Advocacy* which were published in 1996 (Birdsell & Groarke 1996), 2007 (Birdsell & Groarke 2007), and 2016 (Groarke, Palczewski, & Godden, 2016). More recently, the discussion of visual argument has expanded to include accounts of "multimodal" arguments which incorporate not only pictures and other visuals, but gestures, sounds, smells and other kinds of experiences (see, e.g., Kišiček 2014; Groarke 2015; Van den Hoven & Kišiček 2015; Groarke and Kišiček 2016; and Tseronis and Forceville 2017). Other important works in argumentation theory (notably, the account of modes in Gilbert 1997 and Van den Hoven 2016) have made important contributions to the discussion. Tseronis and Forceville 2017 provide a helpful introduction to the study of multimodal arguing.

In this essay I will not discuss the critique of visual arguments found in Fleming 1996 (the reader can find a detailed response in Groarke, Palczewski, & Godden 2016). One finds a more recent rejection of visual argument in Patterson 2010. I cannot discuss his views in detail here, but I will note some keys ways in which they differ from the view elaborated here.

One problem with Patterson's arguments is his focus on "purely visual arguments." As he puts it at one point, his thesis is that "it is a mistake to think that there are purely visual arguments, in the sense of illative moves from premises to conclusions that are conveyed by images alone, without the support or framing of words" (Patterson 2010, p. 115). Here it will suffice to note that I have not defined visual arguments as arguments that are "purely visual" ("conveyed by images alone, without the support or framing of words"). The definition I assume only requires that they have important (non-verbal) visual content. This content usually is combined with words, all the more so when one considers the broader context which provides "support" or "framing" for a particular instance of argument. In real life arguing, arguers typically mix words and visuals and whatever other modes of expression (non-verbal sounds, music, etc.) which can be used to make a compelling case for a conclusion they propose. I can find no author who has studied and defended visual arguments who has defined them in the rarefied way that Patterson has suggested.

One might still ask whether Patterson's doubts about purely visual arguments can be applied to visual arguments in some more general way. The crux of these doubts is the notion that pictures cannot have the meanings that arguments require because they lack the conventions we associate with words. As he writes:

> The ways in which we might interpret a sentence are bounded by the sentence's being embedded in the rule-governed, communal activity of language. The conditions under which a sentence,

uttered by a speaker, will be intelligible to an audience of the same linguistic community restrict the possible meanings of the sentence. Importantly, these conditions restrict not just the meanings that the audience is likely to 'take away' from the speaker's utterance, but the meanings that the speaker may coherently intend by what he says…. Whereas rules and communal criteria of meaning keep us from falling into humpty-dumptyism with language, there are no such checks on picturing. (Patterson 2010, pp. 111-112)

In this essay it must suffice to say that one of the first lessons one learns in art history and other disciplines that study visuals is that arguers use visuals in ways that follow commonly accepted conventions, parameters and constraints (see, to take one example, Kostelnick and Hassett 2003). A skull represents death; a flag represents a nation; a company is known by its logo or coat of arms; in a photographic essay, images are understood as literal representations of reality; in political cartoons, they are typically understood as caricatures, metaphors or allusions to canonical stories; a halo represents a saint; the colour red may mean stop (or the red ink of a deficit) while the colour green signifies go (or the environment); the different kinds of lines in a blueprint or on a map are understood in a particular way; and so on and so forth.

Patterson appeals to the later Wittgenstein in defense of his own views. In response to his interpretation I would argue that Wittgenstein can be more plausibly interpreted in the opposite way, Nyíri suggests that he embraces pictures in an attempt "to overcome the barriers of verbal language by working towards a philosophy of pictures" (Nyíri 2001 p. 4). In keeping with this, Wittgenstein's account of meaning in the *Investigations* (1953) is founded on an account of language games which is designed to expand his earlier account of language and does so in a way that includes many activities in which communication relies on visuals as well as (or instead of) words (see, e.g., 1.16, 1.23, 1.86, 1.140, 1.291, 48, 70, 108, 108, 166, 169, 216, 280, 398, 432-434, 454, 520, 522, 526; 539, 548, 563; 2.iii, 2.xi 2.xii).

In a practical account of visual argument that aims to analyze real life instances of arguing, questions about the interpretation of visual arguments can be answered by applying the pragma-dialectical principles of communication to instances of visual argument (see Groarke 2002). They suggest that we should interpret visual arguments in a way that:

i. assumes that the visual components used by a visual arguer are part of an understandable act of arguing;

ii. interprets key visual components of an argument in a way that makes sense of the major elements they incorporate – visual, verbal, or otherwise (and are in keeping with the conventions that apply in the case at hand); and

iii. favours an interpretation that makes sense within the context and the discourse in which the argument is embedded.

This does not mean that the interpretation of visual arguments is always easy or definitive. Like verbal claims, visual acts of communication may be unclear, vague or ambiguous (or guilty of fallacies like equivocation). In particular instances of arguing, it is enough to say that these three principles of interpretation raise the key questions that need to be asked when we attempt to interpret the visuals, words, sentences and other components that make up an act of arguing.

No general account of interpretation will solve all the problems of interpretation that arise in the study of visual or verbal arguments, but the **ART** approach to visual arguments is expressly designed in a way that reduces the role that the verbal interpretation of visuals needs to play in argument analysis. It does so by emphasizing a visual account of the visual rather than verbal interpretations of their visual content (something that was more frequently emphasized in early attempts to analyze visual arguments – see, for example, Groarke 1996).

3. ACKNOWLEDGING VISUAL ARGUMENTS

In many ways, the growth of visual (and multimodal) argument has been driven, not by contributions to the theory of argument, but by a desire to explain the reality that visuals are important components of many real life acts of arguing. Words provide us with one important way to provide reasons for accepting a conclusion, but they are not the only way to do so. Real life arguers often use visuals for the simple reason that they can be an effective way to express a standpoint or present reasons in its favour. If we want a comprehensive theory of argument that accounts for real life arguing, the use of visuals in these two roles implies that our theory must account for visual arguments in one way or another, and cannot be bound by the traditional assumption that arguments are composed of sentences (or of propositional analogues which are defined and understood in terms of them).

Outside of argumentation theory, visual arguing has a long history. Gestures (pointing, hand signs, facial expressions, etc.) can be used to create very basic arguments without the use of language and probably preceded it. In the history of art, painting is often used to tell stories in a way that favours some conclusion. In modern times, the use of visual argument increased significantly because technological advances made it easier to create and reproduce images. Most notably, the invention of the printed book allowed the widespread printing and circulation of illustrations as well as text. In the 17th century the work of Athanasius Kircher, one of the intellectual giants of his time (see Findlen 2004), is notable for its frequent use of illustrations. They include illustrations in support of mundane scientific projects – showing how hot and cold springs originate, depicting different planetary systems, illustrating the way that various machines work, etc. – as well as more eccentric images that are said to depict what Noah's ark must have looked like (said to be proven by reference to testimony in the Bible), the shape of the lost island of Atlantis (derived from ancient accounts), and

an illustration which is said to prove that the Tower of Babel could not have reached the moon. Works of this sort include many attempts to support visual conclusions or provide visual evidence for a conclusion that is expressed verbally or visually.

The rise of visuals as we know them gains more momentum from the invention and evolution of photography. A famous example that illustrates its implications in the world of argument is associated with the racist murder of Emmitt Till in the United States in 1955. Till was a 14 year old black boy who was kidnapped, beaten, tortured and then murdered because he whistled at a white woman. Sturken and Cartwright (2009, p. 11) describe what happened in the aftermath.

> Till's mother, recognizing the power of visual evidence, insisted on holding an open-casket funeral. She allowed his corpse to be photographed so that everyone could see the gruesome evidence of violence exacted upon her son. The highly publicized funeral, which brought 50,000 mourners, and the graphic photograph of Till's brutalized body [with his eyes gouged out], which was published in *Jet Magazine*, were major catalysts of the nascent civil rights movement…. In this image, the power of the photograph to provide evidence of violence and injustice is coupled with its power to shock and horrify.

In making her decision to 'go visual,' holding an open-casket funeral and widely disseminating photographs of Emmitt Till's mutilated body, Till's mother and her supporters provided visual evidence that gave others a reason to believe that Till was grossly mistreated. The photographs they arranged still circulate widely on the internet, and are still employed in arguments in support of the conclusion that America has issues of racism that need to be addressed.

The use of photography – still photography, documentary film, video and, most recently, virtual reality – now plays a central role in social and political discussion, debate and argument. Visual argument also plays an important role in scientific argu-

ment and discovery. Dove 2011 provides an example in his account of the use of visual reasons for conclusions about the Ivory-Billed Woodpecker. Recent claims that it is not extinct are rooted in controversial video footage which is said to record an existing Ivory-bill in the southern United States. Whatever one decides about the footage and the debate, the controversy emphasizes the importance of visual evidence in ornithology. Donahue 2017 summarizes the views of four key authorities (Jackson, Collins, Fitzpatrick, Gallagher) as follows.

> The bottom line [according to Jackson] … is there's no way to know what Collins saw from that video. Which raises an important question: What exactly would be considered enough evidence to prove the bird's existence? Fitzpatrick, an Ivory-bill chaser himself, says that … "a clear, unambiguous photo of an Ivory-bill is what everyone expects for full, conclusive proof." … Tim Gallagher, who led the search for the Ivory-bill in Cuba last year, agrees that the bar is high….

Collins has argued that the debate should, in lieu of clear visual evidence, consider a "move away from an image-only definition of evidence," but not because he rejects such evidence (which he himself employs). His suggestion is that ornithologists should consider other kinds of evidence as well, but not in a way that would undermine photographic images as necessary evidence in a convincing argument that some species of bird currently exists.

The importance of visual evidence and visual reasoning in real life arguing continues to increase in the wake of the development and spread of digital technology which has made visual arguing ubiquitous. In a way that was not imaginable in earlier epochs, almost anyone can record and distribute what they see (and, remotely, what they don't see directly) in some form of photography. In recent weeks, the local news where I live has been preoccupied with an altercation between a truck driver and cyclist which was recorded by a witness on their phone. The release of the video (still available at <https://www.youtube.com/

watch?v=lCuh8Dr0npE>) has precipitated widespread condemnation of the trucker's actions and an intervention by the police, who have charged him with assault with a weapon. In the news, in conversation, and in court, the videotape functions as the prime reason for concluding that the trucker is guilty of assault.

Most uses of photographs in arguing are instances of "demonstrative" visuals – visuals which attempt to depict the physical world and replicate its key properties (shape, colour, relative size, etc.). Shelley 1996, 2001 distinguishes between demonstrative and "rhetorical" visuals which support particular standpoints, not by being literal depictions of the world, but by functioning as

Figure 1: Cartoon on Hamas (Bob Englehart)

symbols, metaphors and/or allusions that give reasons for some moral judgment. Political cartooning, no longer confined to print newspapers, is one argumentation genre which exploits the effectiveness of visuals of this sort. *Figure 1* provides a ready

example, criticizing the Palestinian group Hamas by suggesting that its bombing of Israel is foolish and counterproductive. It does so by depicting the bombing metaphorically, as an attempt to penetrate an impentrable Israeli iron dome that results, not in the bombing of Israel, but of Palestinian families and citizens.

4. KC TABLES AND DIAGRAMS

Acknowledging visual argument is an important first step toward an inclusive theory of argument, but a fully developed theory must be built on systematic ways of analysing and assessing visual arguments. **ART**'s second element addresses the first of these requirements by proposing a way of analysing visual arguments which is an extension of well-established ways of representing verbal arguments. The resulting approach can be used to analyse any argument, whether it is verbal, visual, or multimodal in some other way.

An **ART** analysis of an argument consists of two parts:

- a "Key Component" (KC) table which identifies the argument's premises and conclusions; and

- an argument diagram that depicts its structure.

In the case of simple arguments, there may be no need to conduct this kind of analysis, though it can still serve as a helpful way to clearly specify the content and structure of an argument. In the case of long and complex extended arguments, the most practical way to apply the **ART** method may be by distinguishing various subarguments and applying the method to each of them.

Real life instances of argument are often unclear in a variety of ways. In the process of constructing KC tables and diagrams, arguments can be clarified by discarding unnecessary, irrelevant or redundant digressions; by better stating claims that are poorly expressed; by recognizing implicit premises and conclusions; and by restating or explaining rhetorical questions, allusions and

other stylistic elements. In situations in which an argument can be interpreted in a variety of ways, alternative interpretations will correspond to different tables and diagrams.

The components of the **ART** approach can be illustrated with simple examples of purely verbal argument. My first example, adapted from a discussion of the work of the medieval logician William of Sherwood in Kretzmann 1966, can be analysed as in

Key Components	Role	Explanation
Sherwood "uses two examples which feature Paris – one mentions the River Seine, the other the university."	Premise (*e*)	Verbal claim
"[A]ll the philosophers influenced by him or his writings were in Paris at some time during a span of years when he could have been lecturing there."	Premise (*a*)	Verbal claim
"There is good reason to believe that William was a master at the University of Paris."	Conclusion (*m*)	Verbal claim

$$e \qquad a$$
$$\searrow \quad \swarrow$$
$$m$$
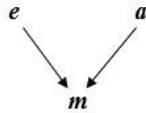
Figure 2: KC table and Diagram for Kretzmann's Argument

Figure 2. In this case the components of the argument are clear and straightforward, so there is little to explain in the column of the KC table which I have labelled "Explanation." I have simply noted that the premises are expressed as verbal claims. The diagram for the argument is, like the KC table, straightforward. Its two arrows connect two reasons for agreeing with Kretzmann's conclusion. One of them cites the examples William of Sherwood uses in his writings; the other the philosophers he influenced.

Our first application of the **ART** method is unremarkable, but it usefully illustrates the basic format of the **ART** approach to

argument analysis. In the case of other arguments, there are other aspects of argument that must sometimes be recognized, as they are in standard argument diagrams. One of them is the distinction between "linked" and "convergent" premises: between premises which provide separate strands of evidence that converge on a proposed conclusion (as in our first example) and premises that are "linked" (or "dependent"), providing a reason to believe the proposed conclusion only when they are combined with (i.e. linked to) one another.

Figure 3 contains a KC table and a diagram for an argument with linked premises taken from a game of "Detective" ("The murderer was someone very strong, for they threw the chair in the room at the victim and it was a heavy armchair."). KC tables

Key Components	Role	Explanation
"[T]hey threw the chair in the room at the victim."	Premise (*t*)	Verbal claim
"[It] was a heavy armchair."	Premise (*h*)	Verbal claim
"The murderer was someone very strong."	Conclusion (*s*)	Verbal claim

$$t + h$$

$$\downarrow$$

$$s$$

Figure 3: KC Table and Diagram for a "Detective" Argument

follow standard diagramming conventions in the case of linked premises, using a plus sign (+) to connect them. In this case, the premises (*t* and *h*) are linked because the claims that the chair in the room was a heavy armchair (*h*) and that the murderer threw it at the victim (*t*) provide evidence for the claim that the murderer was someone very strong (*s*) only when we combine them.

Implicit premises and conclusions are another aspect of argument we need to recognize when we construct KC tables and their associated diagrams. In real life discourse, many claims or

standpoints are left unsaid because they are obvious or obviously implied. In analysing the content and the structure of arguments (and ultimately their strength) these implicit components may need to be recognized. When someone says: "The murderer was very strong, so George cannot be the murderer." they assume and imply that George is someone who is not very strong. Because this is a key component of the reasoning which must be considered when it is assessed as weak or strong, it needs to be

Key Components	Role	Explanation
"The murderer was very strong."	Premise (*s*)	Verbal claim
[George is not very strong.]	Premise [*g*]	Verbal claim
"George cannot be the murderer."	Conclusion (*n*)	Verbal claim

$$s + [g]$$

$$n$$

Figure 4: An Argument with an Implicit Premise

recognized in an analysis of the argument. *Figure* 4 shows how this can be done in a KC table and diagram (by using square brackets to indicate the implicit nature of this argument component and by noting this when one explains it). Like other enthymemes, this example is one which shows that arguments may depend on more than what is explicitly said in words, and that this can be recognized and accommodated when one constructs a KC table and diagram.

5. REPRESENTING VISUAL ARGUMENTS IN ART

We can apply the **ART** approach to argument analysis by recognizing visual elements as premises in KC diagrams. Consider a situation in which my wife suggests that we should go to see Neuschwanstein Castle (the famous Bavarian castle built by King

Ludwig II) on a trip to Germany. When I question her suggestion, she tries to convince me that it is something worth seeing by showing me the photograph in *Figure* 5. In doing so she provides me with a reason for concluding that we should visit Neuschwanstein, though she does so visually – appropriately so given that the issue at question is what we should go to *see*.

Figure 5: Neuschwanstein Castle at Dusk

We can describe the argument by saying that my wife has provided me with a visual premise (a visual reason) in support of her contention that "We should go to see Neuschwanstein Castle." As *Figure* 6 demonstrates, we can analyze this simple visual argument using the **ART** method by including its visual premise in a KC table and diagram.

The analysis in *Figure* 6 recognizes that the argument it summarizes is a case of reasoning and inference that might in many ways be compared to (or contrasted with) others. It outlines the content and the structure of the argument in a way that remains

true to its visual character. This is an essential element of the argument. Arguments about the castle which are wholly verbal can describe what it looks like, possibly in poignant ways. But they cannot provide the detail we see in the photograph and do not *show* us what the castle looks like. Unlike the words in a description, the photograph allows us to *see* the castle in the way photographed.

This does not mean that the photograph and the visual argument it informs cannot be criticized. Like other arguments, visual arguments may be weak or strong. The reason it is important to analyze them is because this is the way to prepare them for assessment. Like verbal premises, a visual premise may be rejected. In the current case, someone might claim the photograph was 'doctored' in some way, taken on a rare evening, or from a vantage point that makes it a poor indication of what one is likely to see when one visits Neuschwanstein. Even if one accepts the photograph as a reliable account of what is likely to see there, one might reject the proposed conclusion by arguing

Key Components	*Role*	*Explanation*
	Premise (*p*)	Visual (photograph of Neuschwanstein at dusk)
"We should visit Neuschwanstein."	Conclusion (*v*)	Verbal claim

p

v

Figure 6: KC Table and Diagram for the Neuschwanstein Argument

that it doesn't follow (because there are other sites to visit that are, for example, more spectacular or more historically interesting).

Real life arguing proceeds dialectically, in ways that frequently mix verbal and visual modes of arguing. I may respond to my wife's entreaty to go and see Neuschwanstein by saying that the photograph in question shows that it is beautiful to see in the summer, but we are visiting Germany in January. She may respond by producing a photograph of the castle in the winter, in an attempt to prove to me that it is something worth seeing then.

My wife might bolster her argument in other ways as well. When I ask her to give me a reason why we should go to Neuschwanstein she may show me the photograph of the mural in *Figure* 7 and say "You love exquisite murals. So we should go see Neuschwanstein." In this case, the premises of her argument provide (i) visual evidence for the suggestion that there is an exquisite mural at Neuschwanstein and (ii) verbal testimony for the claim that I love exquisite murals. Linked together, the visual and verbal premise support the conclusion that we should visit, in the way represented in the KC table and diagram in *Figure* 8.

In a very general way, constructing KC tables and diagrams does for visual arguments what traditional standardization and diagramming (what is usefully called the "dressing" of arguments) does for verbal arguments. In both cases, one analyzes an argument by identifying and extracting its premises and conclusions, and by representing them and its inferences in a diagram which illustrates its structure. In the process, we 'zero in' on what is essential to the argument, adding implicit elements that need to be recognized at the same time that we eliminate explicit elements which are not directly relevant.

Figure 7: Neuschwanstein Mural (St. George Slaying the Dragon)

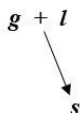| Key Components	Role	Explanation
	Premise (**g**)	Visual (photograph of the St. George mural)
"You love exquisite murals."	Premise (**l**)	Verbal claim
"We should go see Neuschwanstein."	Conclusion (**s**)	Verbal claim

$$g + l$$
$$\searrow$$
$$s$$

Figure 8: KC Table and Diagram for the Mural Argument

One last Neuschwanstein example can illustrate **ART** analysis. Suppose that someone argues that one special feature of the castle's art is a concerted attempt to incorporate visual references to it in the works that it contains. If someone sceptically presents the St. George mural as a counterexample, we might rebut their claim by pointing to the swan on St. George's helmet (a clear reference to Neuschwanstein – the "New Swan" castle, named after a character in Wagner) and to the silhoutte of the castle on the mountainin the background. In this situation, it is not the context of the mural or its central elements that matter, but specific details that provide visual reasons for believing the proposed conclusion. Considered from this point of view, the image is like a paragraph (not a sentence) insofar as it may be its component parts, not its whole, that is central to an argument. In this case, we can dress the argument as in *Figure* 9.

The **ART** way of representing visual arguments has many advantages. It allows us to depict their structure in a systematic way that shows it comparable to the structure of verbal argu-

ments, but does so in a way that recognizes their visual content. The **ART** approach allows us to use the same method of analysis for verbal and for visual arguments – and, in principle, for other kinds of multimodal argument. In the latter case, the Key Component boxes in a KC table can include verbal statements, visuals, or other multimodal carriers of meaning (e.g. a guttural sound, a bar of music, an experience of some sort, and so on). The result is a standard method that can be used in preparing any argument for assessment – and in this way further the discussion and the dialectical exchange in which it is embedded.

Key Components	*Role*	*Explanation*
	Premise (*s*)	Visual (detail from the photograph of the St. George mural)
"Neuschwanstein" means "New Swan Castle."	Premise (*n*)	Verbal claim
	Premise (*c*)	Visual (detail from the photograph of the St. George mural)
The castle in the upper left hand corner of the photograph looks to be Neuschwanstein.	Premise (*m*)	Verbal claim
"The St. George mural incorporates visual references to Neuschwanstein."	Conclusion (*s*)	Verbal claim

$$s + n \qquad c + m$$
$$\searrow \quad \swarrow$$
$$s$$
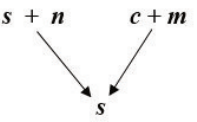
Figure 9: KC Table and Diagram for the Mural Argument

6. THREE EXAMPLES

One feature of visual arguing which is difficult to overstate is the extent to which it encompasses different forms of visual argument. The following three examples illustrate some of this diversity.

Tailgating

Figure 10 is a photograph of a Colorado state billboard designed by an advertising agency (Amélie). It was used in a campaign which aimed to reduce the number of cars tailgating trucks on public highways. The central image on the billboard provides automobile drivers with a reason why they should not tailgate – because it could precipitate the kind of accident graphically

Figure 10: Tailgating Billboard

depicted on the billboard. A second visual element combines the insignia of the police force that patrols the highways (the Colorado State Patrol) with the verbal imperative "GIVE TRUCKS

ROOM. IT'S THE LAW" making this a warning from the police (as a signature on a formal letter ordering one to do something authorizes what the letter says). So understood, we can dress the argument the billboard conveys by constructing the KC table and diagram in *Figure* 11.

Key Components	Role	Explanation
	Premise (*a*)	Visual (3 dimensional, showing a typical accident caused by tailgating)
GIVE TRUCKS ROOM. IT'S THE LAW.	Premise (*l*)	Verbal/Visual (statements accompanied by the insignia of the Colorado police)
"TAILGATING ISN'T WORTH IT."	Conclusion (*t*)	Verbal claim
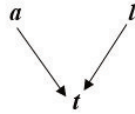
Figure 11: KC Table and Diagram for the Tailgating Billboard

Our tailgating example highlights a visual argument which has convergent premises. In other cases, visual premises are linked to other premises that may be verbal or visual (or both). We have already seen one example of this kind of argument in our discussion of the Neuschwanstein mural. *Figure* 12 is the basis of another. It is a NASA photomontage which compares two photographs taken by the Mars Phoenix Lander. One shows a dig made by the rover on sol (Martian day) 20, the other shows the same dig four sols later. The details (outlined in yellow) at the top of the montage are enlargements of the lower left corner of the two larger photographs.
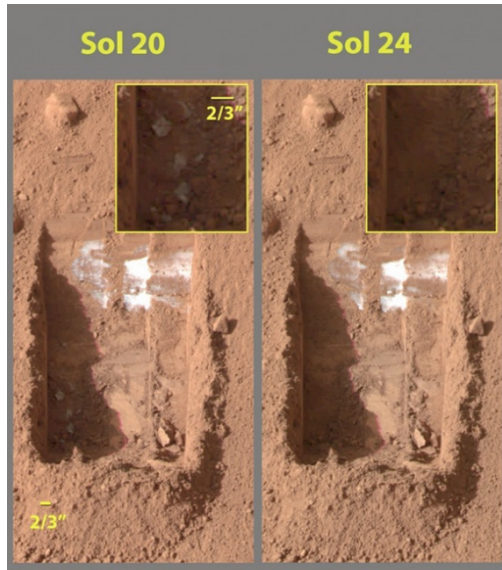
Figure 12: NASA Mars Photomontage

When one looks at the two photographs carefully, one sees an important difference. In the first photograph (most prominently, in the lower left corner of the dig and in the enlarged details) one sees white crystal patches which are no longer evident in the second photograph. As the following tweet reported at the time, NASA scientists took this difference as a reason to conclude that there is water (in the form of ice) on Mars.

There is water ice on Mars within reach of the Mars Phoenix Lander, NASA scientists announced Thursday. Photographic evidence settles the debate over the nature of the white material seen in photographs sent back by the craft. As seen in [the photographs]…, chunks of the ice sublimed (changed directly from solid to gas) over the course of four days, after the lander's digging exposed them. 'It must be ice,' said the Phoenix Lander's lead investigator, Peter Smith. 'These little clumps [we see] completely disappearing over the course of a few days, that is perfect evidence that it's ice.' (Madrigal 2008)

This is an argument that corresponds to the first diagram in *Figure* 13. I have added a second diagram and a further premise to the KC table (**b**) as a way to dress a later elaboration of this argument that added a verbal claim that ruled out the possibility that the white crystals were some other substance that evaporated when exposed to the sun (this premise was backed by other arguments which I have not represented). The two diagrams outline visual arguments that highlight visual premises which are linked to other (visual and verbal) premises.

Key Components	Role	Explanation
	Premise (*1*)	Visual (view of the Phoenix dig on sol 20)
	Premise (*2*)	Visual (view of the Phoenix dig 4 sols later)
The best explanation is that the white crystals are water ice.	Premise (*b*)	Verbal (explanation)
There is water on Mars.	Conclusion (*w*)	Verbal claim

$$1 + 2 \qquad 1 + 2 + b$$

$$\downarrow \qquad \searrow$$

$$w \qquad w$$
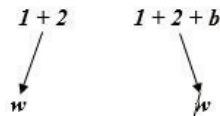
Figure 13: KC Table and Diagrams for two Mars Arguments

A *Placard at an Abortion Rally*

Like many verbal arguments, visual arguments frequently function as enthymemes. In such cases a visual argument has an implicit premise or conclusion which is implied but not stated (visually or verbally). The visual symbol pictured in *Figure* 14 has become a standard meme used in the debate about abortion. It is

Figure 14: Pro-choice Abortion Symbol

Key Components	Role	Explanation
	Premise (*s*)	Visual (a visual negation, the sign stating that 'coat hanger' abortions are unacceptable)
[Legalizing abortion will prevent coat hanger abortions.]	Premise [*p*]	Implicit
Abortion should be legal.	Conclusion (*l*)	Verbal claim

$$s \; + \; [p]$$
$$\searrow$$
$$l$$
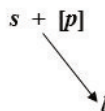
Figure 15: KC Table and Diagram for the Abortion Sign

often placed on placards at demonstrations supporting legalized abortion. Participating in such a demonstration is itself a speech act that declares that one believes (and, quite literally, 'stands up' for the view) that abortion should be legal.

When a demonstrator at such a demonstration holds up a placard with the coat hanger symbol it needs, like any visual symbol, to be understood and interpreted in a way that is consistent with the context and the visual conventions that govern its visual elements. In this case, this is not difficult to do. The red circle with a diagonal is straightforward, functioning as a visual sign for negation. In the context of an abortion rally, the coat hanger which it negates is readily interpreted as an allusion to the crude and dangerous 'coat hanger' abortions that fueled a widespread call for legalized abortion. Carrying the sign is a way to make an argument which provides a reason for believing the holder's view that abortion should be legal (for legalized abortion is a safe alternative to coat hanger abortions). The argument's components and structure are outlined in *Figure* 15.

7. COMPLEX VISUAL ARGUMENTS

So far, I have tried to show how the **ART** approach to argument analysis identifies the key components and the structure of visual arguments which are "simple" insofar as they consist of premises which support one conclusion. "Extended" visual arguments, like extended verbal arguments, incorporate layers of inferences and subconclusions that ultimately lead to some main conclusion. In some cases, such arguments incorporate very long and complex chains of reasoning. A book or a documentary film defending some point of view may offer an extended argument which combines hundreds of premises and/or conclusions (visual, verbal, or multimodal).

In many circumstances, the best way to deal with extended arguments is by breaking them into their constituent subarguments and analyzing each. But there are many extended argu-

ments that can usefully be analyzed as one argument which incorporates subarguments that support it. The following two examples illustrate the point that this is often possible with visual examples of extended argument.

Fast Food Advertising

Variations of the poster in *Figure 16* can be found on hundreds of websites on the internet. Sometimes it is featured with the title "Fast Food Advertising vs. Reality." It aims to discount fast food advertising by pairing photographs of fast food items as they appear in advertisements for these items with photographs of these same items purchased at actual restaurants. In each case, the comparison suggests that fast food advertisements are misleading, and fail to accurately picture the food that fast food brands sell at their actual restaurants. The result is an extended visual argument that is made up of a series of subarguments that support the implicit conclusion that Fast Food advertisements misrepresent the food they advertise.

When we construct a KC table and diagram for this extended argument we need to recognize four subarguments, each of them tied to one of the four fast food items featured: Mcdonald's Big Mac; Burger King Whopper; Mcdonald's Angus Deluxe TP; and the Taco Bell Crunchy Taco. In each case, the subargument contrasts two visual premises, one which replicates the image of the item one finds in fast food advertising, and one which is a photograph of an example of the item which was purchased at an actual restaurant. The result is four comparisons which suggest that the purchased items fail to match what is advertised in fast food advertising. Each of these four conclusions support the further conclusion that fast food advertising fails to represent reality.

MCDONALDS BIG MAC

ADVERTISEMENTS

ACTUAL BIG MAC
- ROTATED TO MOST ATTRACTIVE ANGLE

BURGER KING WHOPPER

ADVERTISEMENTS

ACTUAL WHOPPER
- ROTATED TO MOST ATTRACTIVE ANGLE
- WITH CHEESE
- SLIGHTLY FLUFFED UP, FOR PICTURE

MCDONALDS ANGUS DELUXE TP

ADVERTISEMENTS

ACTUAL BURGER
- ROTATED TO MOST ATTRACTIVE ANGLE
- SLIGHTLY FLUFFED UP, FOR PICTURE

TACO BELL CRUNCHY TACO

Advertisements

Actual Taco

Figure 16: Fast Food Advertising vs. Reality

Key Components	Role	Explanation
	Premise (*bm1*)	Verbal/Visual: the Big Mac in advertisements
	Premise (*bm2*)	Verbal/Visual: an actual Big Mac
[McDonald's misrepresents Big Macs.]	Conclusion [*c1*]	Implicit
	Premise (*w1*)	Verbal/Visual: a Burger King Whopper in advertisements
	Premise (*w2*)	Verbal/Visual: an actual Whopper
[Burger King misrepresents Whoppers.]	Conclusion [*c2*]	Implicit
	Premise (*a1*)	Verbal/Visual: the Angus Deluxe in advertisements
	Premise (*a2*)	Verbal/Visual: an actual Angus Deluxe
[McDonald's misrepresents the Angus.]	Conclusion [*c3*]	Implicit
	Premise (*t1*)	Verbal/Visual: the Crunchy Taco in advertisements
	Premise (*t2*)	Verbal/Visual: an actual Crunchy Taco
[Taco Bell misrepresents Crunchy Tacos.]	Conclusion [*c4*]	Implicit
Fast food ads misrepresent reality.	Conclusion (*m*)	From the title

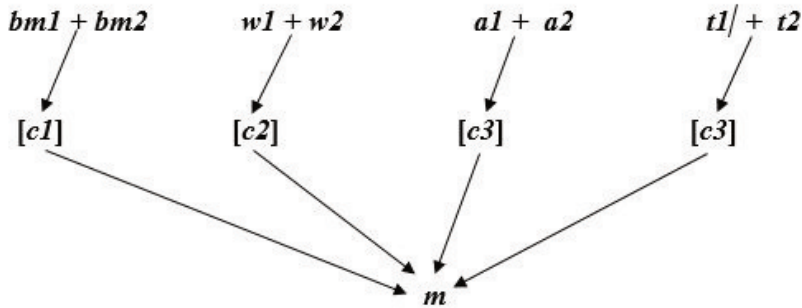*Figure 17: KC Table for Fast Food Argument*

Figure 18: Diagram for Fast Food Argument

A KC table identifying the key components of this extended argument is found in *Figure* 17. *Figure* 18 is a diagram that maps the structure of the entire argument. This dressing of the argument usefully demonstrates how the poster functions as an extended argument which is made up of a series of inferences that culminate in the final conclusion. This mapping of the argument is a useful guide when we assess it, for this needs to be done by evaluating its various components as reliable or unreliable and each of the inferences that support its conclusion as weak or strong. In the first case we must ask whether its key photographs are reliable reproductions of an advertising image or a purchased item. In the second case we must ask whether the conclusion follows from the subconclusions. Doing so systematically raises the questions that need to be answered in a full evaluation of the argument.

In the present context, the important point is that one misunderstands the poster if one treats it in the way that argumentation theorists have traditionally treated visuals – as a visual curiosity or an act of persuasion rather than argument. And that one fails to fully engage it if one treats it in the way that most viewers still do – i.e. as something which does not need to be subjected to a detailed, systematic critical analysis.
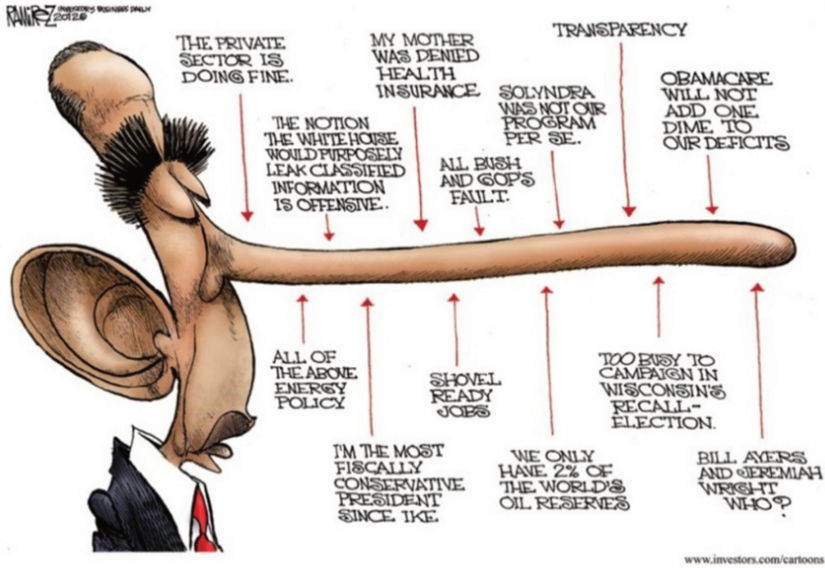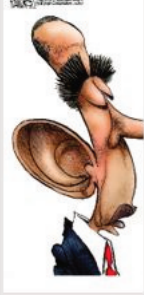
Figure 19: Obama Pinocchio

The Michael Ramirez Obama caricature in *Figure* 19 presents
the former President as Pinocchio. The Pinocchio story is a com-
mon theme in editorial cartoons (see Groarke 2017) which fre-
quently compare some political situation to the plot of some
canonical story (The Trojan Horse, David and Goliath, Alice in
Wonderland, etc.). In the case of Pinocchio, the key visual motif is
an elongated nose which grows, like Pinocchio's nose in the orig-
inal story, every time its owner lies.

In the cartoon in *Figure 19*, the cartoonist's ultimate standpoint
is best expressed in the caricature that is presented as a detail in
Figure 20.

Figure 20: Obama Pinocchio Standpoint

There is no exact way to replicate this standpoint verbally, for the visual ridicules Obama in a way that is difficult to capture in words. Putting this aside, the standpoint can be roughly paraphrased as the claim that Obama is, like Pinocchio, a (ridiculously) inveterate liar who cannot be trusted. Taken as a whole, the cartoon is best understood as an extended argument which provides a series of reasons that purport to show that Obama is a liar like Pinocchio. Each reason can be understood as a subargument which extends the force of the claim that Obama is a liar by building on the previous claims to this effect (something indicated by extending Obama's nose further. *Figure* 21 analyzes the first of these subarguments.

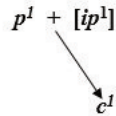| Key Components	Role	Explanation
"[Obama says] the private sector is doing fine."	Premise (p^1)	Verbal claim
[It is a lie to say that the private sector is doing fine.]	Premise [ip^1]	Implicit
	Conclusion (c^1)	Visual (the extended nose indicating that Obama is a liar)

$$p^1 \; + \; [ip^1]$$
$$\searrow$$
$$c^1$$

Figure 21: KC Table and Diagram for the First Subargument in "Obama Pinocchio"

Within this essay, space constraints do not allow me to construct a full KC table or diagram here, but it is easy to summarize what it would look like. For Ramirez's extended argument contains thirteen subarguments which support the claim that Obama is a liar (and, ultimately, an outrageous liar). Each subargument pairs a claim that Obama has made with the implicit claim that it is a lie, inferring (as the cartoonist's own arrows indicate) that Obama is a liar (and more and more so as the chain progresses). We can separate the different components of the argument by labelling each of the explicit verbal premises as p^1, p^2... p^{13}, and each of the corresponding implicit premises (claiming that the verbal premise is a lie) as ip^1, ip^2... ip^{13}; by representing the different subconclusions (that Obama is a liar) as c^1, c^2...c^{12}; and by representing the main conclusion (which is

$$p^1 + [ip^1]$$

$$c^1 + p2 + [ip^2]$$

$$c^2 + \ldots$$
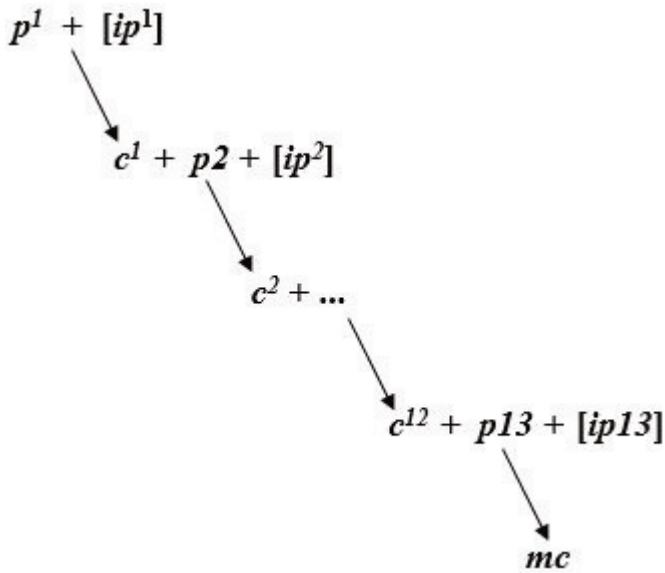
$$c^{12} + p13 + [ip13]$$

$$mc$$

Figure 22: KC Table and Diagram for Obama Pinocchio

expressed in the visual caricature) as **mc**. We can then depict the argument as an argument of the form diagrammed in *Figure* 22. Once again, our dressing recognizes the content and the structure of an extended argument and can serve as a first step toward a proper evaluation of it as an argument which successfully (or unsuccessfully) establishes its conclusion.

8. QUOTATION, DESCRIPTION, AND OSTENSION

One element of an **ART** analysis is a KC table which identifies the key components of an argument. When they can be expressed in purely verbal ways, a KC table identifies them by quoting them, or by paraphrasing their content. In the examples I have already analyzed, visual components are identified by visually reproducing them – as thumbnails in KC tables. I call this process "visual

quotation" because it aims to reproduce an original (or some detail of an original) it refers to.

In many ways, visual quotation is the best way to identify visual premises and conclusions in an argument. A verbal description can be helpful (typically, by highlighting some aspect of it), but *looking* at a visual is an essential element of a visual argument. *Reading* a description of it is a fundamentally different act. Attempts to analyze visual arguments by translating them into words are, in view of this, inevitably approximate, incomplete, and often open to dispute. Competing descriptions of a visual are always possible.

This makes visual quotation the preferred way to identify visual argument components, but there are practical circumstances in which it is impossible – because one does not have the technology or the time it takes to create a visual quotation. In circumstances of this sort, an alternative way to create KC tables and diagrams is by specifying the visual elements of an argument by "ostension." Ostension does not aim to replace seeing with a verbal description but instead attempts to direct our seeing in some way – physically, by pointing, or by words that direct us to something that can be identified and seen.

Figure 23: Smokefree Advertisement

In cases in which we do not have a practical way to incorporate visual images in a KC table, ostension can serve as an alternative way to isolate an argument's visual components. I have demonstrated this method of constructing a KC table by analysing a National Health Service anti-smoking advertisement in *Figure 23* and *Figure 24.*

Key Components	Role	Explanation
"The average smoker needs over 5000 cigarettes a year."	Premise (*n*)	Verbal
The photograph of a smoker hooked with a fish hook.	Premise (*f*)	Visual (visually comparing a hooked smoker to a hooked fish)
Smokers should "get unhooked" and call the number listed or visit the getunhooked website.	Conclusion (*mc*)	Verbal claim

n

f

mc

Figure 24: A KC Table Using Ostension to Indicate Visual Components

As Marraud 2016 has usefully pointed out, real life arguers often use ostension as a way to incorporate visual components in their arguments. I might answer the suggestion that one should never paint a house pink by saying: "A pink house can be beautiful – look at the famous house called 'The Pink Lady' – across the street from the Carson Mansion in Eureka, California." This is an argument insofar as it supports the conclusion that a pink house can be beautiful by citing as evidence a particular house that is alleged to demonstrate that this is so. The argument is conveyed in words, but the verbal part of the argument is incomplete and the argument is ultimately visual, for the words themselves do

not contain the evidence, but merely serve as a way to direct us to it: as a way to ostensively demarcate visual evidence.

The same argument could in a variety of ways be reconstituted in a way that incorporates visual evidence: by going to the house and looking at it, by using photographs like the one in *Figure 25*, and so on. In such a case, visual quotation is the preferred way to present the evidence, for it is the ultimate basis for the proposed conclusion, but there will be many situations in which one does not have the means to make it available. In such circumstances, ostension may be the best available alternative. In real life arguing, the answer to the question whether we should

Figure 25: The Pink Lady

represent visual argument components by visual quotation or ostension is a practical one which must be answered by determining what is expedient, feasible and effective.

9. CONCLUSION

In this essay I have demonstrated a way of analyzing visual arguments which creates a KC table that identifies the key components of an argument and an associated diagram which depicts its structure. This **ART** approach provides a method of analysis

that can be applied to all arguments: to verbal arguments, to visual arguments, and to other kinds of multimodal arguments. In the case of visual arguments, I have argued that the best way to identify visual components of an argument is through visual quotation, though ostension can serve as a second best alternative. Both ways of identifying visual components allow us to systematically construct standard argument diagrams that outline the structure of visual arguments.

In his rejection of visual argument, Johnson 2005 has written that: "The … problem for a theory of visual argument is to deal with the related issue of how to 'convert' the visuals, which are the components of a visual argument, into reasons which can function as premises that are supposed to lead to a conclusion, so that the machinery of informal logic can be applied to the resulting argument." The method I have proposed shows that it is a mistake to think that we need to "convert" the components of a visual argument into verbal reasons that can function as premises or conclusions. No conversion is required. All that is needed is some way of identifying and recognizing visual elements and the way in which they are used within an argument. The examples we have already noted show that they are tied to the same kinds of structures (the inference patterns depicted in argument diagrams) that characterize verbal arguments.

Considered from this point of view, one of the advantages of **ART** analysis is its use of visual quotation and ostension, which identify and recognize visuals as visuals. The issue Johnson raises is not inherent in visual arguments themselves, but in traditional approaches to argument, which define the key components of an argument verbally (as sentences or the propositions that sentences refer to). If one takes this for granted, then the only way to make room for visual argument components is by translating them into verbal analogues that can play the role of premise or conclusion. The way to overcome the challenge is not by finding a way to convert them into something they are not, but by giv-

ing up on this assumption and adopting a more expansive view of argument, inference, and communication.

I will end this essay by noting that the kind of analysis **ART** proposes can be carried out informally, without the formal construction of KC tables and argument diagrams. One might produce a documentary film interpreting Bosch's three panel painting, *The Last Judgment*, as an argument supporting the conclusion that we should live a pious life. In principle, this could be done formally, by creating a series of KC tables and diagrams. But a formal analysis of this sort is not the best way to develop one's argument if one is producing a film for an audience of art lovers who are innocent of informal logic or argumentation theory. In such circumstances, the important point is that one can still apply the basic principles that inform **ART** by identifying key visual components and showing how they work together to create an argument.

Of course, the ultimate reason why we need to acknowledge visual arguments and analyze them is because this is the way to prepare them for assessment. So that we can assess them in the ways that we assess other arguments – by deeming their premises reliable or untrustworthy; by asking whether they provide compelling support for the conclusion; and so on. An account of how to do so is the aim of the third element of the **ART** approach to informal logic (**T**). But that is a topic for another essay.

Mural (St. George Slaying the Dragon). Image from Wikimedia Commons, by Schoenitzer, available under the GNU Free Documentation License, Version 1.2. <https://commons.wikimedia.org/wiki/File:NeuschwansteinCastle-interior17.jpg>. *Figure 10*: Tailgating Billboard. Public Domain Image (Colorado State, Colorado State Patrol). *Figure 12*: Mars Photomontage. Public Domain Image (NASA). *Figure 14*: Pro-choice Abortion Symbol. (Photoshopped Image). *Figure 16*: Fast Food Advertising vs. Reality. Public Domain Image. *Figure 19*: Obama Pinocchio. Michael Ramirez editorial cartoon (Reprinted by permission of Michael Ramirez and Creators Syndicate, Inc.). *Figure 23*: Smokefree Advertisement. Public Domain Image (National Health Service, United Kingdom). *Figure 25*: The Pink Lady. Wikimedia Commons image, by Eurekamike, available under the terms of the GNU Free Documentation License. <https://commons.wikimedia.org/wiki/File:Pink_lady_in_eureka.jpg>.

REFERENCES

Birdsell, David, and Leo Groarke, eds. 1996. *Argumentation and Advocacy*, 33(1,2). (Special Double Issue on Visual Argument).

Birdsell, David, and Leo Groarke, eds. 2007. *Argumentation and Advocacy*, 43(3,4). (Special Issue on Visual Argument).

Blair, J. Anthony. 1996. "The Possibility and Actuality of Visual Arguments." *Argumentation and Advocacy*, 33(1), pp. 23–39.

Donahue, Michelle. "Possible Ivory-Billed Woodpecker Footage Breathes Life Into Extinction Debate." http://www.audubon.org/news/possible-ivory-billed-wood-pecker- footage-breathes-life-extinction-debate. Accessed 25 Jan. 2017.

Dove, Ian. 2012. "On Images as Evidence and Argument." *Topical Themes in Argumentation Theory*, edited by F. H. van Eemeren and B. Garssen, Amsterdam: Springer, pp. 223–238.

Findlen, Paula, ed. 2004. *Athanasius Kircher: the Last Man Who Knew Everything*. New York: Routledge.

Fleming, David. 1996. "Can Pictures Be Arguments?" *Argumentation and Advocacy*, 33(1), pp. 11–22.

Gilbert, Michael A. 1997. *Coalescent Argumentation*. Mahwah: Routledge.

Groarke, Leo. 1996. "Logic, Art and Argument." *Informal Logic*, 18(2,3), pp. 116–131.

Groarke, Leo. 2002. "Toward a Pragma-Dialectics of Visual Argument." *Advances in Pragma-Dialectics*, edited by F. H. van Eemeren, Newport News/Amsterdam: Vale Press/Sic Sat, pp. 137–151.

Groarke, Leo. 2015. "Going Multimodal: What Is a Mode of Arguing and Why Does It Matter?" *Argumentation*, 28(4), pp. 133–155.

Groarke, Leo, Catherine H. Palczewski, and David Godden. 2016. "Navigating the Visual Turn in Argument." *Argumentation and Advocacy*, 52(4), pp. 217–235.

Groarke, Leo, Catherine H. Palczewski, and David Godden, editors. 2016. *Argumentation and Advocacy*, 52(4). (Special Issue on Twenty Years of Visual Argument).

Groarke, Leo, and Gabrijela Kišiček. 2016. "Compassion, Authority and Baby Talk: Prosody and Objectivity." *Argumentation, Objectivity and Bias: Proceedings of the 11th OSSA Conference*, Edited by Laura Benacquista and Pat Bondy, Windsor: University of Windsor. http://scholar.uwindsor.ca/ossaarchive/OSSA11/.

Groarke, Leo. 2017. "Editorial Cartoons and ART: Arguing with Pinocchio." *Multimodal Argumentation and Rhetoric in Media Genres*, edited by Assimakis Tseronis and Charles Forceville, Amsterdam: Benjamins.

Johnson, R. H. 2005. *Why Visual Arguments?* Edited by H. V. Hansen, C. Tindale, and R. H. Johnson. http://web2.uwindsor.ca/courses/philosophy/johnsoa/visargtext. htm.

Kišiček, Gabrijela. 2014. "The Role of Paralinguistic Features in the Analysis of Multimodal Argumentation." *Proceedings of the 8th ISSA Conference on Argumentation*, Edited by B. Garssen, D. Godden, G. Mitchell, and F. S. Henkemans, Amsterdam:

Rozenberg Quarterly. http://rozenbergquarterly.com/xissa-proceedings-2014-therole-   of-prosodic-features-in-the-analysis-of-multimodalargumentation/.

Kjeldsen, Jens E. 2015. "The Study of Visual and Multimodal Argumentation." *Argumentation*, 29, pp. 115–132.

Kostelnick, Charles, and Michael Hassett. 2003. *Shaping Information: The Rhetoric of Visual Conventions*. Carbondale: Southern Illinois University Press.

Kretzmann, Norman. 1966. *William of Sherwood's Introduction to Logic*. Minneapolis: University of Minnesota Press.

Madrigal, Alexis. 2008. "Mars Phoenix Tweets: 'We Have ICE!'." *Wired Magazine.* http://www.wired.com/ 2008/06/marsphoenix- tw/.

Marraud, Hubert. 2016. "The Role of Ostension in Visual Argumentation." *Cogency*, 8(1), pp. 21–41.

Nyíri, Kristóf. 2001. "Wittgenstein's Philosophy of Pictures." *Wittgenstein Research Revisited*, University of Bergen, Bergen. http://www.hunfi.hu/nyiri/nyiri_bergen_tlk.htm.

Patterson, Steven W. 2010. "'A Picture Held Us Captive': The Later Wittgenstein on Visual Argumentation." *Cogency*, 2(2), pp. 105–134.

Shelley, Cameron. 1996. "Rhetorical and Demonstrative Modes of Visual Argument: Looking at Images of Human Evolution." *Argumentation and Advocacy*, 33(2), pp. 53–68.

Shelley, Cameron. 2001. "Aspects of Visual Argument: A Study of the March of Progress." *Informal Logic*, 21(2), pp. 85–96.

Sturken, Marita, and Lisa Cartwright. 2009. *Practices of Looking: An Introduction to Visual Culture*. New York: Oxford University Press.

Tseronis, Assimakis, and Charles Forceville, eds. 2017. *Multimodal Argumentation and Rhetoric in Media Genres*. Amsterdam: Benjamins.

van den Hoven, Paul. 2016. *Gold Mining. The Art of Rhetorical Discourse Analysis*. Xiaman: Xiamen University Press.

van den Hoven, Paul, and Gabrijela Kišiček. 2017. "Processing Multimodal Legal Discouse; the Case of Stanley 'Tookie' Williams." *Multimodality and Reasonableness in Judicial Rhetoric*, edited by Maurizio Manzin, Federico Puppo, and Serena Tomasi, *Studies on Argumentation & Legal Philosophy,* vol. 2, *Quaderni Della Facoltà Di Giurisprudenza*, vol. 28, Trento: Università Degli Studi Di Trento, pp. 33–62.

Wittgenstein, Ludwig. 1953. *Philosophical Investigations*. Edited by G.E.M. Anscombe and R. Rhees. Translated by G.E.M. Anscombe, Oxford: Blackwell.