Vision Fulfilled

Book · December 2018

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Vision Fulfilled

The Victory of the Pictorial Turn

Edited by András Benedek and Kristóf Nyíri

Vision Fulfilled

Perspectives on Visual Learning

Edited by András Benedek and Kristóf Nyíri

Volume 1

Hungarian Academy of Sciences
Budapest University of Technology and Economics

András Benedek / Kristóf Nyíri (eds.)

Vision Fulfilled

The Victory of the Pictorial Turn

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Vision Fulfilled: The Victory of the Pictorial Turn

Budapest:
Hungarian Academy of Sciences /
Budapest University of Technology and Economics
2019

The papers here collected have been accepted after a strict double-blind peer-review process.

Cover design: István Ocztos

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László Lovász

Opening Address

> "The idea of calling my book *The Name of the Rose* came to me virtually by chance, and I liked it because the rose is a symbolic figure so rich in meanings that by now it hardly has any meaning left."

The renowned Italian writer, who also happened to be a distinguished professor of semiotics, Umberto Eco used these words to describe how he had found a title for his maybe most successful novel. This quotation illustrates how strong and effective a symbolic sign or image can be. It may be open to several interpretations and harbour an infinite number of emotions. It may even arouse a different feeling for each and every one of us.

Images have been with us since the dawn of civilization. Despite our ancestors having hardly been able to speak, their cave paintings were able to tell stories. However, with the appearance and spread of Gutenberg's galaxy, pictures enjoyed only a secondary role to written texts. Right until, that is, the emergence of photography which brought about the next revolution. And today it is crystal clear that – as noted by many – we again live in an era of images,.

We take photos, send them, post them, comment on them, archive them, and we do all this in a matter of a few minutes. Today's primary school students are growing up in this world, in a whirlpool of images coming from a myriad of sources.

László Lovász

We know and see that education is facing a crucial paradigm shift all over the world. As a considerable part of communication is done with the help of pictures, it is vital to develop skills for understanding the language of images.

For a long time now, the Hungarian Academy of Sciences has played a pioneering role in researching the basic problems of visual culture and visual pedagogy. In our Subject Pedagogy Research Program launched in 2016, our research groups provide scientifically proven answers to the methodological questions of education. We have a research group that focuses specifically on visual culture. Another is headed by professor András Benedek, who also happens to be one of the organizers of this conference, and who – together with Kristóf Nyíri, Member of the Academy – was a founder of the Visual Learning Lab at Budapest University of Technology and Economics.

The participants of the Eighth Budapest Visual Learning Conference will face a challenging task to choose out of the almost one hundred lectures to be delivered here. Allow me to highlight some of the topics here: theory and practice of education in the visual era, multimedia content development, the visual mind or, for that matter, scientific visualization.

When I am talking about the importance of images in the transfer of knowledge, I am not only referring to education. I am also thinking of the presentation of scientific results. Here, at the Hungarian Academy of Sciences, we are aware of the importance of images – and from time to time we try to call the public's attention on several platforms to an exciting new scientific result, often with the help of a single image and a couple of short sentences. It is high time for the international scientific community to face this challenge, and acknowledge that it is not enough to merely publish comprehensible texts about complicated scientific problems, but that this information should also be demonstrated through an image – a photo or maybe even an infographic.

Through these ideas I would like to wish everyone a rich and thought-provoking time during the lectures. I would like to thank all the organizers of this conference for their hard work. Thank you for your attention and enjoy the conference.

Kristóf Nyíri

Preface

The chapters in the present volume emerged, after a strict process of peer-reviewed selection and rigid editing, from the talks given at the 8th Budapest Visual Learning Conference (VLC8), held on April 26–28, 2018. The volume is the first one in an envisaged series of three. The planned title of the second volume is *Learning and Technology in Historical Perspective*, while that of the third: *Image and Metaphor in the New Century.*

VLC8 was preceded by seven earlier conferences, which in their turn were based on the activities of the Budapest Visual Learning Lab (VLL – www.facebook.com/BudapestVisualLearningLab), established at the Department of Technical Education, Budapest University of Technology and Economics, in October 2009, by Professor András Benedek and myself. In his introductory chapter to the present volume Benedek provides a detailed story of both the VLL, and the mobile learning project which formed so to speak its earlier background.

Benedek's chapter and the two chapters following it make up our first book section REINVENTING EDUCATION. Benedek offers a sweeping summary and analysis of the paradigm shifts in the history of pedagogy from the pre-Comenius age of dominant verbalism through the post-Comenius age of – let us face it – still dominant verbalism to the liberating experiences of the present age, with the visual dimension increasingly playing a substantial, indeed real, role in education. The subsequent chapter, my paper "A Hundred Years On: Dewey's *Democracy and Education* Revisited", attempts to show a connection between on the one hand Dewey's ultimately misguided and defeated ideas on what he believed was progressive education, and on the other hand his almost total blindness to the cognitive significance of pictures – physical and/or mental visual images. I side with those who maintain that visual thinking belongs to the primor-

dial cognitive equipment of humankind, so that discovering its essential importance in fact amounts to a turning back to our roots – a conservative turn. In the third chapter, Jean-Rémi Lapaire's "Mental Action as Visible Bodily Performance: An Educational Perspective" the spectacular fact is brought to the fore that visual thinking is actually based on physical gestures, physical behaviour; it is the communicative human body that primarily creates and conveys meanings.

The volume's next section, FROM IMAGE TO WORD: RHETORIC COMES TO AGE, contains four chapters. The first one, by Petra Aczél, amounts to a radical reconceptualization of what rhetoric really is, always was, and indeed must mean to our present. Rhetoric mobilizes the visual, but also, Aczél claims, the sensual. She adopts and adapts the phrase "deep rhetoric" to suggest the multimodal richness of a practice and its theory, a theory that by now has access to a conceptual framework in which it can show that rhetoric, while conjuring up emotions, also communicates knowledge, and what is more: wisdom. Aczél's entire oeuvre on rhetoric is breathtaking, and is extensively exploited by her former student Eszter Deli, author of the next chapter. The specific subject of the chapter is "visual rhetoric in disaster news communication", but Deli's more general message and conclusion suggests that visual rhetoric in the sense of telling and influencing through images is not dependent on linguistic translation, "the picture speaks louder than words". Aczél is richly quoted also in the third chapter of this section: "The Culture of Typography: Combining Rhetorical Resources with Typeface Design", by Irma Puškarević. The chapter offers a broad and informative account of how typefaces convey meanings – how the look of a printed phrase influences the connotations of that phrase – and builds up a convincing argument for the claim that typographic design – facing entirely new challenges, and exploiting entirely new options, in the digital age – is a significant and indeed fascinating dimension of visual rhetoric. Finally, the fourth chapter in this section, Michalle Gal's "Visual Metaphors and Cognition: Revisiting the Non-Conceptual", radically enriches the formula "from image to word" by arguing that those essential building-blocks of verbal language we have since Lakoff and

Johnson come to realize metaphors constitute, are ultimately based on *visual* structures. And then there are metaphors that address straightforwardly the eye: visual metaphors, of which, too, Gal's chapter offers an analysis both wide-ranging and profound.

The next section, VISION, EMOTION, COGNITION, starts with Vicky Karaiskou's chapter "Visuality and Emotional Governance in the Public Sphere". Karaiskou argues that visuals play a decisive role in creating emotional and cognitive consensus in the public sphere because language is polysemantic, involving both verbal and visual modes, visuals being intertwined with emotions. She argues that the pivotal role of visual narratives is due to the repetition of visual stimuli and their visuality; she thus sides with the "picture-superiority effect" theory. Her contribution is followed by Pedro Branco's chapter "Films that Think and Feel". Branco discusses the intricate relationships between filmmaking and *anthropology*, maintaining that the ethnographic film can indeed communicate its academic message relying more on the visual than on the verbal. His analysis focusses on Robert Gardner's film *Forest of Bliss* (1986), a film that is "an almost entirely wordless study of Benares, India, relying primarily on images and sounds to convey meaning". The insights this film shares with its viewers are "fundamentally non-linguistic". The next chapter, by Szilvia Finta, guides us back to ancient times. She offers a wealth of material to show that in the Hebrew Scriptures and in rabbinic reasoning images – phrases conjuring up mental pictures and relying on the effect of those pictures – play a paramount role. Teaching by pictures, Finta claims, "became the most important teaching method in Ancient Judaism". And she generalizes this claim – very much in line with the main message of the present volume – by suggesting that "the only way to be able to come to terms with concepts is through everyday events, pictures, images and visions". Finta's chapter is followed by Edna Barromi-Perlman's "Analysis of Photographs of Kibbutz Youth Hikes in Israel". The photographs Barromi-Perlman here analyzes were made by Azaria Alon, a member of Kibbutz *Bet Ha'shita*, and have, as Barromi-Perlman makes very clear, an ideological message. As she puts it: "The hikes carried traits of heroism and bravery; the hikers themselves were perceived

to be courageous, hiking was perceived as a means for forging connections with the land and the country." The final chapter in this section, on "Sign/Spoken Bilingualism Research", by Szilárd Engelhardt, with its emphasis on the multimodal nature of language, felicitously adds to the notion of polysemanticity Karaiskou's chapter exploited. Engelhardt on the one hand points to the absolutely essential fact that deaf communities' *sign languages* are full-fledged linguistic systems, on the other hand underlines that "most deaf signers are bilingual in at least one sign and one spoken language". The chapter focusses on some specific visually perceivable mouth and lip movements of signers. Understanding the evolutionary significance of sign languages is indispensable if we want to arrive at an adequate interpretation of the pictorial turn happening today; this is a topic I will return to in my "Postscript" to the present volume.

The following section, SCIENCE AND VISUALITY, begins with a chapter on the role of diagrams: Péter Neuman describing the visual approach physicist Richard Feynman introduced to help performing calculations in quantum field theory. The so-called Feynman diagrams can however, as the chapter's author puts it, "also be viewed as a visual, intuitive representation of quantum field theoretical processes". What we encounter here, writes Neuman, is "an imagistic reasoning for solving a problem of a theory that lacks images per se". The second chapter in this section, "How to Classify Images in Natural Sciences? A Case Study in Nanoscience", by Catherine Allamel-Raffin and Jean-Luc Gangloff, on the one hand takes issue with the view that images in scientific papers are "mere illustrations", stressing that "[p]hilosophers in particular have often underestimated the place of images in scientific activities and results" – philosophers, let me add, who fell victim to the "linguistic turn" of the first half of the twentieth century. On the other hand they offer a detailed in-depth analysis of the problem of computational simulation images, images playing, by today, an essentially important role in cutting-edge scientific research. Such images, the authors maintain, cannot claim to represent "absolute truth", they do however add up to a certain "robustness", in the sense of "a convergent network of evidence". The profound observations by Allamel-Raffin and Gangloff so to speak

receive a broader context in the following chapter, "A Visual Framework for Producing and Assessing Visual Representations in Scientific Discovery and Communication", by Luc Pauwels. This very encompassing chapter is perhaps best summarized by the author's own introductory lines: "The multifaceted issue of visualization in science involves the complex processes through which scientists develop or produce (and communicate with) imagery, schemes and graphical representations, computer renderings or the like, using various means (ranging from a simple pencil on paper to advanced computers or optical devices). Therefore, not just the result, but also how it was attained (i.e., the implicit or explicit methodology in the broad sense of the word) and the subsequent uses to which the result is put, should all be scrutinized as to their impact on the nature of what is visually represented and the ways in which this representation can be employed. Visual representations in science differ significantly in terms of how they relate to what they purport to represent (i.e., their representational and 'ontological' status), the means, processes and methods by which they are produced, the normative contexts involved, the purposes served and the many ways in which they are used and combined…" – "Representational" status, "ontological" status – the chapter by Pauwels is very much, just like the previous chapter was, about truth and reality. Finally, the last chapter in this section returns to a topic the section began with: the role of diagrams. Amirouche Moktefi focusses on diagrams in mathematics, taking issue with the view that their role is at most pedagogical and heuristic, but have no place in contexts of formal proofs. Moktefi stresses that sequences of diagrams have radically more cognitive potential than single diagrams do, emphasizes the power of visual imagination, and argues that diagrams contribute to the robustness of mathematical proofs, where robustness is perhaps more essential than impeccable formal correctness. Notice the re-emergence of the notion of robustness.

We come to the section REVOLUTION ONLINE. The first chapter here is "The Visual Turn in Mobile Communication: Notes about Travel Experiences", by James E. Katz. This chapter has a special significance, on the one hand because the person and work of Profes-

sor Katz represents one of the basic continuities between our present visual learning project and the earlier mobile learning project mentioned in András Benedek's introductory chapter – Katz was a prominent constant participant in our mobile communications conferences – and on the other hand because it spectacularly introduces and affirms the claim that it is with the online revolution that the pictorial turn – a liberating return to the primordial cognitive makeup of humankind – became possible. The following chapter, Elke Diedrichsen's "On the Semiotic Potential of Internet Memes", discusses a popular phenomenon made possible by online culture. An internet meme, as Diedrichsen puts it, "is a visual schema for content that can take multiple forms, and that goes 'viral' by being shared rapidly via the world wide web". Internet memes are image-text combinations which Diedrichsen finds useful to analyze in terms of Peirce's notions symbol, icon, and index. "Memes are popular", Diedrichsen writes, "because they provide an easy and fast-paced manner of publishing small content that reaches great resonance world wide, because it points to matters of topical popular interest, or to sentiments and life experiences shared by a great number of young people." The topic of image-text combinations is the central theme Ágnes Veszelszki has been working on throughout these years in the framework of the VLL project. In our volume *How To Do Things With Pictures* (eds. Benedek–Nyíri, 2013) she too has written on internet memes; in the present volume her subject is *motivational messages*, inspirational image-text combinations shared in social media, actually "verbal and visual banalities", however with a bewilderingly big impact. And Veszelszki's investigation shows that here the impact of the image component is relatively weak. Can the banality of a text override our striving for visual meaning? Or is perhaps the pictorial turn, all other appearences notwithstanding, less significant than the editors of the present volume had supposed? This might be the hint of the two chapters in our last section, Past, Present, Future.

  The first of these concluding chapters, Daniel L. Golden's "Narrative Knowledge beyond the Pictorial Turn", a brilliant summary of what Jerome Bruner, W. J. T. Mitchell, and Gottfried Boehm wrote (and perhaps failed to write) on the subject, formulates the

simple but essential message that generally, or at least very often, the interpretation of an image relies on verbal captions. Golden claims that "the *pictorial turn* will be able to fulfill its mission only by making use of the *narrative turn* in order to avoid falling back into the trap of the *linguistic turn*". I believe Golden is right, but his argument might be enhanced by some additions; I will attempt to supply such in my "Postscript" to this volume. By contrast, I have nothing to add to Professor Philipp Stoellger's "As Turns Go By: New Challenges after the Iconic Turn". I think he provides a profound analysis of the difficulties still facing us today in picture theory, and indeed offers a perfectly formulated future research program for those who wish to work on overcoming those difficulties.

In the series *Perspectives on Visual Learning* we do not follow the today dominant convention of indicating, for internet references, the date when authors last accessed the site they quote. Rather, each internet reference has been checked by the editors; all internet references contained in this volume were valid at the time the material was sent to the printers.

December 2018

REINVENTING EDUCATION

András Benedek

A New Paradigm in Education: The Priority of the Image

1. Introduction

Education is a complex social process in which we all become, sometime and somehow, immersed *in situ,* while we can grasp its essential changes in historical dimensions only due to its relatively slow alteration. Therefore the case of education and pedagogy, beyond its significance in everyday life, can be considered a priority subject of scholarly enquiry too. This complex theme has been in the focus of science since the beginnings; first of all, Plato viewed education as a condition to participation in public affairs. Today, the launch of the Content Pedagogy Research Program indicates the increased responsibility taken by the Hungarian Academy of Sciences. For now pedagogy, closely connected to social practice, and related education sciences, are marginalized among Hungarian academic disciplines. Thus, due to the complexity of education, interdisciplinary approaches create potentials that can be seen as opportunities to conduct relevant analyses of transformation processes.

In the case of education and pedagogy, deeply rooted in traditions, one always has to be bold to speak of new paradigms in the sense that we tend to see a certain compound of ideas, values and methods as characteristic of a specific period. Not trying to avoid a debate, I dare to mention in the present chapter two of these characteristic compounds. First, if we consider the truly old 17th-century Comenian paradigm (which is visibly exemplified by *Orbis Pictus*), where the role of demonstration and pictures in education was first recognized, then we can conclude that this paradigm, considered novel at that time, in the Middle Ages, had (and for today's generations it still has) an effect on teaching and learning. Second, and it is a more

important proposition, I believe that, at the dawn of the 21st century, the long-standing Comenian paradigm should be reconsidered and seen as undergoing transformation due to the profoundly altered environment of and new requirements for education; I attempt to prove that a new paradigm is taking shape and it gradually becomes prevalent in education today and in the near future.

2. An Interdisciplinary Background

Some years after the millennium our professional discussions organized with Kristóf Nyíri – initially from a philosophical perspective, later in the wider interdisciplinary framework of the need for innovation in education – about the role of images in human activities inspired us to initiate a study of the increasingly diverse effects that mobile communication devices exert on learning. Somewhat earlier the Hungarian Academy of Sciences (MTA) and T-Mobile, recognizing the potential impacts of networked systems, interactivity, online and mobile learning, decided to support our interdisciplinary social science research program on the topic of communications in the 21st century.[1] Seeking opportunities of an overarching scientific dialogue across a wide range of disciplines, we established the Visual Learning Lab (VLL) at Budapest University of Technology and Economics (BME) in the autumn of 2009.

The quest for a comprehensive interpretation of *visuality* raised attention among the representatives of several disciplines: linguists, aestheticians, sociologists and professionals from the technological sciences joined the forum's program. We also succeeded in attracting international participation through some remarkable contributions (by

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[1] The results of this project were published in a series of books in Hungarian, English and German between 2001 and 2010. Here we can highlight the following volumes of English-language studies, edited by Kristóf Nyíri, and published by Passagen Verlag, Vienna: *Mobile Understanding: The Epistemology of Ubiquitous Communication* (2006); *Mobile Studies: Paradigms and Perspectives* (2007); *Integration and Ubiquity: Towards a Philosophy of Telecommunications Convergence* (2008); *Engagement and Exposure: Mobile Communication and the Ethics of Social Networking* (2009).

James Elkins, Theo Hug and Barry Smith), broadening the scope of discussions with the topics of distance education and m-learning.[2] Recognizing the demand for a cross-border exchange of scientific ideas and the opportunities of dialogue led us to organize seven annual international conferences since 2010. Despite its modest beginnings with 30–40 scientific talks initially, the series has evolved into a significant forum with the 8th Budapest Visual Learning Conference, held in 2018, hosting nearly a hundred speakers, European and overseas experts alike, all with contributions to the state-of-the-art interpretation of a now thematically diverse field of visuality.

In retrospect, we can conclude that the role of these conferences surpassed the initial aim of creating a new forum for professional dialogue between scientists during the past decade. In addition to making contributions (abstracts and presentations) accessible in the digital domain, some of the speakers were also invited to contribute to revised and edited collections of papers published after each conference.[3]

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[2] Some of the dates and themes for the initial VLL discussions were the following: November 4, 2009 – *Visual Practices Across the University*, edited by James Elkins (München: Wilhelm Fink Verlag, 2007); October 6, 2010 – "Media Competency and Visual Literacy – Conceptual Considerations", a talk given by Professor Theo Hug (University of Innsbruck); November 3, 2011 – "How Vision Works", a Skype-based remote presentation and consultation by Professor Barry Smith (University at Buffalo).

[3] It is worth showing how the topics for the seven volumes published by Peter Lang Internationaler Verlag der Wissenschaften, Frankfurt/M., between 2011 and 2017, have changed. The titles for the first five books, co-edited with Kristóf Nyíri, also refer to the interdisciplinary approach to our topics: *Images in Language: Metaphors and Metamorphoses* (2011); *The Iconic Turn in Education* (2012); *How to Do Things with Pictures: Skill, Practice, Performance* (2013); *The Power of the Image – Emotion, Expression, Explanation* (2014); *Beyond Words: Pictures, Parables, Paradoxes* (2015). The titles of the last two volumes, co-edited with Ágnes Veszelszki, also imply that complex interpretation provided frames of reference in several dimensions for the analysis of links to other disciplines: *In the Beginning was the Image – The Omnipresence of Pictures: Time, Truth, Tradition* (2016); *Virtual Reality – Real Visuality: Virtual, Visual, Veridical* (2017).

It should be noted that the impact exerted by visual effects on learning generated epochal impulses in a number of theoretical and practical experiments[4] during the past decades. One of the special dimensions of the transformation going on in education and pedagogy these days, which is perceivable as ICT applications are becoming more and more commonly used, is that we strive to apply images more explicitly than ever before. However, this cliché-like statement is not easy to realize in everyday pedagogical practice, since in formal learning the traditional system of the institutionalized knowledge of teachers and schools tends to obstruct with the full force of inertia. The interdisciplinary framework for VLL and the novel ideas emerging within this framework, mutually encouraging initiatives from various disciplines, the international outlook and reciprocal reflection, all provided drives which led us to recognize new phenomena and necessarily raise the issue of paradigms for education, or more specifically, paradigms for teaching and learning.

3. Setting Out from the Comenian Paradigm

The justifiably most influential "reform pedagogue" of the Middle Ages, Comenius, in his *Didactica magna* published in 1657, proposed a scheme for reforming teaching methods and argued that a reform in the education of the young constituted the basis upon which any subsequent political, social and religious reform must be built. "It was essential that the teacher furnish the learners with a set of images that would stamp themselves indelibly on their imaginations. This meant placing what is visible before the eyes, what is audible before the ears, what is olfactory before the nose, gustatory

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[4] Let us mention only a few of the foundational works here: Rudolf Arnheim, *Art and Visual Perception: A Psychology of the Creative Eye,* Berkeley, CA: University of California Press, 1954; Rudolf Arnheim, *Visual Thinking,* Berkeley, CA: University of California Press, 1969; Eugene S. Ferguson, "The Mind's Eye: Nonverbal Thought in Technology", *Science,* vol. 197, no. 4306 (1977), pp. 827–836; Kristóf Nyíri (ed.), *Mobile Studies: Paradigms and Perspectives,* Vienna: Passagen Verlag, 2007.

before the tongue, and tactile before the touch."[5] In that age such a notion represented an abrupt paradigm shift in opposition to verbal teaching and the closed, dogmatic world view based on the interpretation of texts; it was centred around "modern" demonstration in the classroom and textbooks as a key to reforming the content and methodology of education. Comenius was he first in this era to emphasize that the learner should have an immediate visual apprehension of what was being spoken of. He tried to arrange the early 17th-century assumptions about the world in a certain logical order, according to basic notions referenced by words (from the creation of the world to the elements, to the mineral, vegetable and animal kingdoms, etc.). In 1658 he formulated this system in a multilingual illustrated textbook, *Orbis sensualium pictus,* generally known as *Orbis Pictus,* which became the exemplar of picture-books used in teaching.[6] Although the attempt to find a universal language was a utopian vision, it meant, through recognizing "multimodality", a novel pedagogical method for a new age, which became the progressive trend of methodological renaissance for the next three centuries.

The course of textbook development also reveals the process of methodological modernization in education through pictorial means of demonstration. When examined from the viewpoint of cultural history, it is palpable even within the framework of national education how, with the spread of printed books, the textbooks of

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[5] Umberto Eco, *The Search for the Perfect Language,* transl. James Fentress, Oxford: Blackwell, 1995, p. 214.

[6] *Orbis Pictus* was first published in Latin and German. This edition was followed by versions in many other languages, including English, French, Italian and Hungarian. An example of the latter in a three-language edition is Johannes Amos Comenius, *Orbis sensualium pictus trilinguis Hoc est: Omnium fundamentalium in mundo rerum, et in vita actionum, Pictura et Nomenclatura. Latina, Germanica et Hungarica. Cum Titulorum juxtá atque vocabulorum indice = Die sichtbare Welt Dinge, und Lebens Verrichtungen Vorbildung, und, Lateinische, Deutsche, und Ungarische Benamung. Samt einen Titel- und Wörter-Register = A Látható Világ háromféle nyelven, az az: Minden derekassab ez világon lévő dolgoknak és ez életben való tselekedeteknek le ábrázolása és Deák, Német és Magyar megnevezése. A fellyúl való Írásoknak és szóknak laystromával,* Noribergae (Nürnberg): Endterus, 1669.

mass education became the objectified cultural entities or objects of teaching/learning that reflected the scientific and ideological conditions and aspirations of the specific era. However, the strengthening of ideological effects was inversely proportional to the weakening role of pictures. A remarkable tendency of this change is that new definitions for teaching and learning clearly refer to the role of imagery in a number of languages. The strings or pairs of terms *kép–képzés–képzettség* in Hungarian, *Bildung–Ausbildung* in German, *образ–образования* in Russian, or *image formation–imagination* in English are all illustrative examples of this function.

However, the need for rethinking the Comenian paradigm has also been urged by an increasing number of factors and development traits. In the millennial period a considerable impulse, also discernible at the level of references in scientific publications, came from a novel and increasingly cited phenomenon, the emergence of *connectivist learning theory* and its impact on learning. New developments in the innovation of education can be highlighted as essential tendencies. In this period our research brought forth new findings in relation to the transformation of the learning environment through interactive tools, the diffusion of techniques to present knowledge by visual means, and the capacity to customize procedures for the individual learner. We assumed that the educational theory of organic learning environments (which do not counterpose the social and technological aspects) could open up the potential to treat teaching and learning constructively for a wider spectrum of pedagogical thinking through the critique of the earlier mechanistic approach. Analyzing the features of electronic learning environments at the level of theoretical approaches and models, it can be concluded that the processes studied have by no means come to an end or closure. In fact, accelerated technological advancement does not seem to lose pace or decelerate, so it is difficult to predict its cultural and social impacts. Nevertheless, the latest developments in visual learning offer a constructive framework of analysis to study phenomena in both theory and practice, and encourage us to outline a new, emerging paradigm of education.

4. Towards a New Paradigm

In the history of education, it has been a remarkable tendency of change during the past centuries that new definitions linked to teaching and learning increasingly indicate the role of *imagination*. As audio-visual aids (slide projectors, epidiascopes, overhead projectors and later smart boards) have extended more and more dynamically the functions of traditional blackboards, with the beginning of the new millennium modern educational theory, it seems, suddenly overcame the slow diffusion of the century-old pedagogical paradigm for continuing education. The expansion of the learning space and the realization of the theoretical possibility of *ubiquitous communication,* our ability to communicate and learn wherever and whenever we want, enabled the rise of a new learning environment and, via its increasingly "smarter" devices of mobile communication, new functions which can considerably improve the efficiency of learning.

Abandoning the world of classrooms and textbooks, the new pedagogical paradigm that began to take shape after the millennium provides an opportunity for the so-called Net Generation or *Homo interneticus*[7], a generation who are predisposed to use the internet in a world where a significant proportion of schools and pedagogues organize the processes of education and training in a 20th-century fashion – one of its gravest paradoxes. Besides traditional communities, new, internet-based communities of interest, like those of Facebook and Twitter, organize themselves rapidly and massively, posing educational and pedagogical challenges as well as disruptive social impacts. While the printed picture or page had been a tool supporting the presentation of the environment throughout the era of printed books, within a few decades it was replaced by the touchscreen – the emblematic interface of the information society, already known to and used by the youngest children. The verbal skills of the historical *Homo oralis* served as a basis for *Homo typographicus,* who already

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[7] Michael H. Goldhaber, "The mentality of *Homo interneticus:* Some Ongian postulates", *First Monday,* vol. 9, no. 6 (2004), http://journals.uic.edu/ojs/index.php/fm/article/view/1155/1075.

draws knowledge from printed sources, and in turn evolves into the currently emerging species of *Homo interneticus,* making others engage in interactions through a multitude of visual effects generated in a virtual environment.

The inevitability of education development is also reflected in the abundance of publications on this theme. Literature on the new forms and methodological or technical innovation of learning has grown particularly in international terms. Representatives of education who interpret the new paradigms and also influence pedagogical innovation globally[8] – relying on classic psychological and philosophical (behaviourist, cognitive and constructivist) schools on the one hand, and considering the impacts of modern communications technologies on the other – took a conspicuously impulsive turn towards the analysis of network characteristics in the millennial period. During the past few years network-based learning emerged as a particularly influential trend of learning theory, since it represents the pedagogical application of the basic principles of network theory, information technology and Web 2.0 theories. According to the position claimed by George Siemens in 2005,[9] *connectivism* is the real learning theory for a digital era. This theory,[10] defining all related concepts, is also important for the new pedagogical paradigm be-

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[8] See Rita Kop and Adrian Hill, "Connectivism: Learning Theory of the Future or Vestige of the Past?", *The International Review of Research in Open and Distributed Learning*, vol. 9, no. 3 (2008), http://www.irrodl.org/index.php/irrodl/article/viewArticle/523/1103.

[9] George Siemens, "Connectivism: A Learning Theory for the Digital Age", *International Journal of Instructional Technology and Distance Learning,* 2005, http://www.elearnspace.org/Articles/connectivism.htm.

[10] Critics of connectivism argue that it is a new pedagogical approach rather than a separate theory; it can be placed at the interdisciplinary intersection of information technology, pedagogy and network research. It can also be linked to the constructivist theory, since this conception already carried network character, exemplified by social networks on the web. The most familiar example of the networked and collaborative management of knowledge contents, carrying the features of the new connectivist conception, is the community portal Facebook. See Kop and Hill, *op. cit.*

cause it focuses on the network aspect and its integration into knowledge management.

The spread of connectivist learning theory is also linked to the fact that a significant range of progressive educational institutions (particularly in higher education), in response to new student attitudes, habits and new forms of learning, have turned to instruction methods which adopt, wholly or partly, e-learning applications during the last decade. These systems are online or web-based learning management systems (LMSs) enabling perpetual communication, in a synchronous or asynchronous form, between network nodes or participants (in relations between instructor and student, instructor and instructor, or student and student). The new learning theory considers learning as a process where the informal exchange of information between nodes, supported by networked electronic devices, has a major role. Knowledge acquisition is a process in which specialized nodes connect to sources of information.

Today's modern e-learning materials (Open Education Resources, OER) are designed to answer the question how the content of education, the learning material to be acquired, can be "opened", mediated in structures which are appealing and motivating for students. It has been essential in our theoretical and later practical work in the framework of the Content Pedagogy Research Program of the Hungarian Academy of Sciences that increasing the number and quality of visual elements, exploiting opportunities provided by new technical frameworks, and in turn increasing learners' activity, carry a significant potential for transferring the content elements of teaching. Indeed, at around the millennium this process was already recognized and interpreted by philosophers as a return to primordial visual communication. Therefore pictorial, iconic or even comics-based communication can be considered a natural mode of human communication, with video clips as remarkable displays of particular, relatively short narratives (which owe their rapid spread among teenagers in the last decade especially to advertisements and YouTube).

The traditional classroom and textbooks following the conventions of many centuries increasingly fail to transfer pictorial content required by learners today. Oddly enough, in the domains of infant

education (nursery and elementary schools) and their material environments pictures and tableaux have a considerably greater role, compared to the classrooms providing "day care" at higher levels of education. The transformation of the age-old blackboard through the overhead projector to the smart board took many decades, occurred in the past 50-year period, but a truly significant turn has been brought about by the massive spread of touchscreen devices and the practice of personalized use commencing at a very young age among children. And the world outside schools has changed more rapidly and creatively during the past 15–20 years of this turn. Creating images, supplementing messages with diverse contents, applying specific genres (video, flash multimedia content and animation) have become an increasingly general practice in everyday communication. Storing, editing and sharing pictures, distributing them through networked communications systems became a basic social activity in the past decade, which has been modestly integrated into teaching and learning at schools. Modern curriculum theory highlighted the complex effect of cognitive and affective functions decades ago, which makes the pedagogical significance of utilizing pictures an issue of utmost importance.

5. The Demand for a Methodological Turn

Prior to our research started in 2016, at the beginning of this decade, we studied the impacts of digitizing traditional curricula (textbooks) and possibilities of developing OER in an ICT environment[11] at the university level.[12] One of our essential findings was that curricula

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[11] See András Benedek and György Molnár, "New Approaches to the E-content and E-textbook in Higher Education", in L. Gómez Chova, A. López Martínez and I. Candel Torres (eds.), *INTED2015 Proceedings: 9th International Technology, Education and Development Conference,* Valencia: International Academy of Technology, Education and Development (IATED), 2015, pp. 3646–3650.

[12] In 2014 and 2015, within the framework of a digital content development project at BME, we compiled 29 coursebooks whose authors – all of them are excellent professionals – participated in compulsory preparatory training sessions where project leaders asked them to incorporate, following the principles of mod-

with sequenced order and closed structures have to face two fundamental problems today. On the one hand, educational contents in such closed and rigid structures are not really capable to change, cannot be easily updated and there is an extremely low level of professional motivation to do so. On the other hand, the young (pupils and students) who are well aware of the potentials of acquiring networked knowledge are not really keen on adopting and thoroughly processing traditional learning materials. This finding is particularly important in light of the fact that in the current ICT environment pictorial messages are clearly dominant in young people's communication practices, that is, when they use social networking applications (e.g. Facebook) or read news feeds and blogs. Although on the blackboard, a basic element of the traditional classroom setting, pictures (images of handwriting and drawings) are visible in the making, our teaching materials prepared through traditional procedures often contain few pictorial components. Besides the traditional text-dominated curriculum design, there is another, practical reason for this, the limited length for textbooks, or difficulties and often cost-increasing effects in the print production of pictures and colours.

The application of images for educational purposes inherently carries the practical potential of a methodology based on multimodality, especially when pictorial constructs are used in answers to well-formulated questions, or rely on the illustrative power of pictures in order to direct attention to new issues or problems. This brings us to the demonstrative description of our new orientation projects, which also evoke our search for new pathways. One of these

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ern OER development, a significant number of visual objects into their course material. The analysis of 10 randomly selected coursebooks – with differing specialized contents prepared in the framework of this project mainly for the purposes of vocational teacher training – shows that a total of 602 pictorial objects (figures, photographs, tables) were included by the editors in these screen-optimized coursebooks, with an average of 4.5 sheets or 90 pages in length. Consequently, even the new coursebooks that aim to support online learning present a visual object for only every 1.5 pages on average. According to our research findings, these illustrations consisted of 42% tables, 36% figures (drawings) and only 22% or one-fifth of photographs, respectively.

pilot projects, an example of utilizing multimodality in the framework of an electronic instruction platform, is *Sysbook*[13], which focuses on a systems theory approach, and has been co-developed with associates of the Institute for Computer Science and Control of the Hungarian Academy of Sciences (MTA SZTAKI) for the past few years. The other path is the so-called "open content development" (OCD) model,[14] designed to support methodological innovation responding to the demands of vocational training, and aiming to introduce OCD as a project of the MTA-BME Open Content Development Research Group.

We can witness the increasing diffusion of applying media components in electronic curriculum designs, despite the fact that the spread of advanced dynamic and interactive media applications is initially hindered by low bandwidth for internet access and the shortage of storage capacity. Here again we should refer to the source mentioned above: applications supported by cloud-computing services (e.g. Google Docs, Google Search and Dropbox) have increasingly higher ratings among the most popular education-oriented programs. The spread and increasing demand for networked learning and learning materials developed in a complex network structure clearly indicate that cloud services are required in both instruction and curriculum development. These insights led us to consider open content development in education as a possibility of managing visual elements of content, and have been followed in our new development projects since 2016.

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[13] Tibor Vámos et al., *Sysbook: About Systems for Everyone, for University Students and for System Experts,* 2016, http://sysbook.sztaki.hu/index.php; András Benedek and János Cz. Horváth, "Case Studies in Teaching Systems Thinking", in Mikuláš Huba and Anthony Rossiter (eds.), *Preprints of the 11th IFAC Symposium on Advances in Control Education,* Bratislava: IFAC, 2016, pp. 286–290.
[14] See András Benedek, "Nyitott tananyag-fejlesztési modell (OCD)" [An Open Content Development Model], *MTA–BME Nyitott Tananyagfejlesztés Kutatócsoport Közlemények* 1 (2016), pp. 5–21.

6. Conclusion

In the framework of this chapter I made an attempt to elucidate the practical opportunities which always existed but currently gain paramount significance, provided by pictorial communication and *imagination* as a source of innovation, especially as a possible pathway to the methodological innovation of education. We have attained theoretical insights and conducted up-to-date experiments to find new ways, even if they may seem chaotic, indicate for all stakeholders the intentions to foster change. Here we can refer to the examples of *Sysbook* and two OCD development projects with different characteristics: the first demonstrates methodological opportunities in the "traditional" compound of portal functions on the internet, the second highlights the same for the "collaborative" development of content (learning materials) in a cooperative learning environment. At this point I would rather try to define the general features of the new teaching/learning paradigm than detail these examples. The current shift shows the emergence of a new educational paradigm and one of the essential features of the teaching/learning communication process that should be considered in the innovation of education and pedagogy. However, we can also raise the question: What are the distinctive, new elements of the kind of education or, more precisely, learning paradigm reflected in current changes, which become generally prevalent in learning on a societal level?

First, it is a significant new element that *learning methods are no longer defined primarily by teaching,* as it was the case in the enclosed world of classrooms of the past, *but by applied tools, which in turn shape the personal learning environment along the lines of ICT development trends*. Thus teaching methods that are linked to the properties of the learning environment become increasingly common.

The second feature is that *the new organic learning environment is basically formed and functions in a way characteristic of networks, which enables us to set up a system of distributing and developing knowledge, mediated content which is more dynamic than ever and potentially efficient*.

The third significant feature is that, as pictorial elements enabled a new form of knowledge transfer through the Comenian paradigm, *pictures, particularly moving images not only retain their generic role but they are also capable, with apparent efficiency, to innovatively support the learning process during the construction, distribution and reception of content.*

Finally, it is essential to confirm the fact that *fundamentally, learning remains a social activity,* even if the appearance of virtual elements in our modern world stirs up reasonable frictions at the conservative institutional level of education. Through developing and delivering pictorial content, messages addressing others (individuals or communities) are articulated, carrying immense pedagogical potential for the innovation of teaching and learning.

Kristóf Nyíri

A Hundred Years On
Dewey's *Democracy and Education* Revisited

1. Introduction

For the past hundred years or so, sound education has become widely equated with "progressive education". The emblematic philosopher of progressive education in the 20th century was John Dewey. This paper will begin with an overview of the essential ideas of Dewey's pathbreaking essay "My Pedagogic Creed" (1897), as well as those set forth in his *The School and Society* (1899), and in his main work on pedagogy and social progress, *Democracy and Education* (1916). In section 2, "Progressivism: A Blind Alley?", I will continue by drawing attention to Dewey's brief 1930 piece "How Much Freedom in New Schools?", and will point out that it took Dewey quite a time to mature, both as a thinker and as a person. His long and happy first marriage, with his wife an early and very extreme feminist, holding, also, at that time extraordinary views on child upbringing, clearly had a problematic effect on Dewey. By 1930, however – a widow, and past seventy – he became ready to repudiate the idea of "progressive education". In the third section, coming to *visual education*, I will attempt to demonstrate that Dewey practically never understood the fact – and this makes revisiting his work, in the present framework, especially urgent – that there is, beyond merely *verbal* thinking, which he was so critical of, and thinking embedded in *actions*, which he so very much espoused, such a thing as *visual thinking*. No sound education is feasible without a recognition of the significance of the visual: mental images, physical pictures, moving images, the logic of the pictorial. In contrast to his mentor William James, or say to James's colleague Thorndike, Dewey did never really grasp what the visual dimension amounts to. And, as I will suggest in section 4, "Blindness Persists: The Visual after Dewey", it is striking how all

milestone 20th-century writings on education, in the wake of Dewey and of course under the impact of the linguistic turn, lost sight of the visual. I will mention Paul Goodman's *Compulsory Mis-Education* (1964), Ivan Illich's *Deschooling Society* (1971), Allan Bloom's *The Closing of the American Mind* (1987), Seymour Papert's *The Connected Family: Bridging the Digital Generation Gap* (1996), Don Tapscott's *Growing Up Digital: The Rise of the Net Generation* (1998), all of them unaware of the issue of visual learning, and will especially try to come to terms with Neil Postman's *The Disappearance of Childhood* (1982), a book in which the rise of the image is taken to amount to a cognitive collapse for those growing up in the late 20th century. By way of conclusion, in section 5, I will briefly sum up why educational theory and practice today – call them progressive, call them conservative – are badly in need of taking note of the pictorial turn now happening.

2. The Essential Dewey

Dewey's two main educational ideas are unmistakably spelt out in his early brief piece "My Pedagogic Creed".[1] The first: it is the "child's own instincts and powers" that "furnish the material and give the starting-point for all education", but the child's powers should be stimulated, as Dewey puts it, by "the demands of the social situations in which he finds himself".[2] The second: in our complex modern society children cannot directly mature into the world of adults. They need to be educated in special institutions – *schools* – which as it were represent life in a simplified form. Dewey stresses that schools should maintain a continuity with the child's home life, with the neighbourhood, with the playground, that education should begin with "manual training" like cooking, sewing, etc., and that the child's introduction into "the more formal subjects of the curriculum"

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[1] Published in a booklet with two articles, the first one written by Dewey. New York and Chicago: E. L. Kellogg & Co., 1897.
[2] "My Pedagogic Creed", pp. 3 f., cf. also p. 13: "The law for presenting and treating material is the law implicit within the child's own nature."

should occur essentially "through the medium of these activities". Fundamentally, the school should be conceived of as "a form of community life", not as "a place where certain information is to be given, where certain lessons are to be learned". And this is, then, the perspective from which the school teacher's role is to be understood. "The teacher", writes Dewey, "is not in the school to impose certain ideas or to form certain habits in the child, but is there as a member of the community to select the influences which shall affect the child and to assist him in properly responding to these influences."[3]

In *The School and Society*[4] the emphasis is again on the educational consequences of the radical transition from a preindustrial society to the industrial one having emerged in 19th-century America. "Those of us who are here today", writes Dewey, "need go back only one, two, or at most three generations, to find a time when the household was practically the center in which were carried on, or about which were clustered, all the typical forms of industrial occupation", but by now "concentration of industry and division of labor have practically eliminated household and neighborhood occupations – at least for educational purposes".[5] To re-introduce these occupations, in a specially selected form, into the life of the child, is what the modern school should be there for.[6]

The idea Dewey is here putting forward he will formulate in a rather more well-balanced way in his *Democracy and Education*. The classic passage:

> To savages it would seem preposterous to seek out a place where nothing but learning was going on in order that one might learn. – But as civilization advances, the gap between the capacities of the young and the concerns of adults widens. Learning by direct sharing in the pursuits of grown-ups becomes increasingly difficult except in the case of the less advanced occupations. Much of what adults do is so remote in

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[3] *Op. cit.*, pp. 7, 11, 8, 9.
[4] Chicago: The University of Chicago Press, 1899.
[5] *The School and Society*, pp. 6 and 9.
[6] *Ibid.*, pp. 36 f.

space and in meaning that playful imitation is less and less adequate to reproduce its spirit. Ability to share effectively in adult activities thus depends upon a prior training given with this end in view. Intentional agencies – schools – and explicit material – studies – are devised. The task of teaching certain things is delegated to a special group of persons. – Without such formal education, it is not possible to transmit all the resources and achievements of a complex society.[7]

However, Dewey still warns of schools not allotting sufficient weight to practical activities.[8] And in the chapter "Education as Conservative and Progressive" he especially warns of the idea that "education is essentially retrospective; that it looks primarily to the past and especially to the literary products of the past".[9]

3. Progressivism: A Blind Alley?

As I indicated by way of introduction, Dewey in his later years became critical of the progressive education movement. He now spoke about "the one-sidedness of the idea of the 'child-centered' school", criticized schools that "indulge pupils in unrestrained freedom of action and speech, of manners and lack of manners", and raised the question "whether the tendency of progressive schools has not been to put emphasis upon things that make schooling more immediately enjoyable to pupils rather than upon things that will give them the understanding and capacity that are relevant to contemporary social life".[10]

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[7] *Democracy and Education: An Introduction to the Philosophy of Education*, New York: The Macmillan Company, 1916, p. 9.
[8] "…when the schools depart from the educational conditions effective in the out-of-school environment, they necessarily substitute a bookish, a pseudo-intellectual spirit for a social spirit", *ibid*., p. 46.
[9] *Ibid*., p. 85.
[10] John Dewey, "How Much Freedom in New Schools?", *New Republic* 63 (9 July 1930), pp. 321 f. and 324.

Should the quality of being enjoyable really be the main aim of schooling? Dewey's early comrade-in-arms William James did certainly not think so.[11] In his 1899 *Talks to Teachers* he wrote: "*Keep the faculty of effort alive in you by a little gratuitous exercise every day.* That is, be systematically heroic in little unnecessary points, do every day or two something for no other reason than its difficulty… [inure yourself to] self-denial…"[12] It might be proper to cite here two remarks by that great admirer of James, the Austrian elementary school teacher and Cambridge philosopher Ludwig Wittgenstein. In 1948 he jotted down:

> I think the way people are educated nowadays tends to diminish their capacity for suffering. At present a school is reckoned good if the children have a good time. And that used *not* to be the criterion. Parents moreover want their children to grow up like themselves (only more so), but nevertheless subject them to an education *quite* different from their own. – Endurance of suffering isn't rated highly because there is supposed not to be any suffering – really it's out of date.[13]

And the second remark, one Wittgenstein made in a conversation in 1950: "When you say NO to a child, you should be like a wall and not like a door."[14] But recall also another Austrian, Robert Musil, to whose protagonist in *The Man Without Qualities* the following wis-

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[11] For a devastating description of Dewey's pathetic attempts to pretend James belonged to the liberal camp, see Richard M. Gale, "William James and John Dewey: The Odd Couple", *Midwest Studies in Philosophy* XXVIII (2004), pp. 149–167.

[12] William James, *Talks to Teachers on Psychology: and to Students on Some of Life's Ideals*, (1899), New York: Henry Holt, 1916, pp. 75 f.

[13] MS 168, p. 2, entry dated 30.5.48, here quoted from Ludwig Wittgenstein, *Culture and Value*, transl. by Peter Winch (Oxford: Basil Blackwell, 1980), p. 71e. – In the volume *A Companion to Wittgenstein on Education*, eds. Peters and Stickney, Singapore: Springer, 2017, the passage is quoted on p. 45 with the comment: "Wittgenstein's rather Nietzschean views of education appear untimely now."

[14] K. E. Tranøy, "Wittgenstein in Cambridge 1949–51: Some Personal Recollections", *Acta Philosophica Fennica*, vol. 28, nos. 1–3, p. 15.

dom appeared as an "extraordinary new thought": "a man's possibilities, plans, and feelings must first be hedged in by prejudices, traditions, obstacles, and barriers of all sorts, like a lunatic in his straitjacket, and only then can whatever he is capable of doing have perhaps some value, substance, and staying power". Contemporary educational theorists would hardly agree with Musil. One exception I am aware of is Paul Tough. Telling about his young son, he wrote: "I found, as countless parents had found before me, that he needed something more than love and hugs. He also needed discipline, rules, limits; someone to say no." [15] Quoting a teacher, Tough writes: "Our kids don't put up with a lot of suffering. They don't have a threshold for it." Yet what they need more than anything is "a little hardship: some challenge, some deprivation they can overcome…"[16]

4. Blocked View: Dewey and the Visual

Throughout his career as an educationalist Dewey was sharply critical of "mere bookishness"[17], the extreme reliance on linguistic symbols. As he put it in *Democracy and Education*, there is a "danger that instead of really calling up the absent and remote in a way to make it enter a present experience, the linguistic media of representation will become an end in themselves".[18] For Dewey the contrast to bookishness is *thinking embedded in activity*, but occasionally he seems to get a glimpse of thinking as bound up with the perceptual, and indeed the visual. There is an intriguing, perhaps important, passage in "My Pedagogic Creed", where Dewey writes that we tend to "present the child with arbitrary symbols" – the symbols of written language. Symbols however, though "a necessity in mental development", are merely "tools" which should serve to give rise to mental images. As he formulates it: "the image is the great instrument of

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[15] Paul Tough, *How Children Succeed: Confidence, Curiosity and the Hidden Power of Character* (2012), London: Arrow Books, 2014, p. 183.
[16] *Ibid.*, p. 84.
[17] Cf. e.g. *Democracy and Education*, p. 272 (see also note 8 above).
[18] *Ibid*.

instruction. What a child gets out of any subject presented to him is simply the images which he himself forms with regard to it". The task, Dewey says, is to train "the child's power of imagery" and "seeing to it that he was continually forming definite, vivid, and growing images of the various subjects with which he comes in contact in his experience".[19]

In *The School and Society* Dewey manages to refer to the topic of children's drawings. He even prints four such, but his focus is not on the visual; what he stresses is how instruction can induce children to actually observe, and thus more correctly represent, the objects they draw.[20] In his 1910 *How We Think* there is a very brief discussion of the subject, with Dewey registering that "the child's interest is not in pictorial representation, but in the things represented".[21] Many other scattered remarks on drawing in the context of education can be found in Dewey's writings, but altogether it is fair to say that he did not attach importance to the topic, and did not in any depth pursue the idea of a close connection between thinking, visual mental images, and children's cognitive evolution. Still, he was not entirely unaware of the significance of the visual. In *How We Think* he remarks: "we must recall that language includes much more than oral and written speech. Gestures, pictures, monuments, visual images, finger movements – anything consciously employed as a sign is, logically, language."[22] In *Democracy and Education* he mentions "so-called expressive movements to which others are sensitive; blushing, smiling, frowning, clinching of fists, natural gestures of all kinds".[23] And in his volume *Human Nature and Conduct*, written some years later, there occurs the formula: "Language grew out of unintelligent babblings, instinctive motions called gestures, and the pressure of circumstance."[24] Now if one thinks of the huge literature

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[19] "My Pedagogic Creed", pp. 14 f.
[20] *The School and Society*, pp. 39–47.
[21] Chicago: D. C. Heath, pp. 123 f.
[22] *Ibid.*, pp. 170 f.
[23] *Op. cit.*, p. 38.
[24] *Human Nature and Conduct: An Introduction to Social Psychology*, New York: Henry Holt, 1922, p. 79.

on the fundamental significance of gesture language as the primordial language of mankind, especially of Wundt's work and the attention Dewey's close collaborator G. H. Mead paid to Wundt, if one thinks of the role of James I alluded to above by way of introduction, the very full analysis he gave of the problem of visual thinking in his *Principles of Psychology* (1890), the subsequent parallel summaries provided by Edward Thorndike,[25] or indeed the leading turn-of-the-century American psychologist Titchener's crucial investigations into the nature of mental imagery,[26] then Dewey's rare pronouncements on the subject seem insufficient to say the least.

5. Blindness Persists: The Visual After Dewey

In his book *Compulsory Mis-Education*[27] Paul Goodman allots quite some space to summarizing, appreciatively, Dewey's overall pedagogical position. That position involved cautioning against an excessive focus on written texts – against "bookishness". Goodman goes further. He suggests that in the age of movies, TV and radio, with "less literacy, there would be more folk culture", and that much "suffering of inferiority" would be avoided if young people did not have to meet the "perhaps unnecessary standard" of literacy. What Goodman does not see, and none of the authors I here list do, is that it is not word language at all, but the language of visual signs, which is the primordial language of humanity, and that, consequently, it is the pictorial that should form the basis of elementary instruction.

Certainly Ivan Illich in his *Deschooling Society*[28] did not see this, though in some other respects he sharply differed from Dewey. While Dewey attached special significance to the school system, Illich simply wanted to demolish it, and rely, instead, on informal

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[25] I am indebted to András Benedek for having drawn my attention to Thorndike.

[26] See my *Meaning and Motoricity: Essays on Image and Time*, Frankfurt/M.: Peter Lang Edition, 2014, esp. pp. 14–16, 26, 134 and 136. The volume is available online.

[27] New York: Horizon Press, 1964.

[28] New York: Harper & Row, 1970.

learning webs. To Allan Bloom it never occurred that the "closing of the American mind" might not be entirely independent of American educationalists' eyes being closed to the significance of the visual. Neither did Seymour Papert, in his *The Connected Family*,[29] come to see that significance, even though he dwelled, repeatedly and at length, on the topic of video games.[30] Tapscott does touch on images, but has nothing of interest to tell. By contrast, Neil Postman, in his *The Disappearance of Childhood*, provides an extensive survey of the history of communications technologies, from pictographic writing through alphabetic writing through book printing to film and television, referring to some of the most famous authorities on the topic (and sadly misrepresenting the work of that pioneer of the theory of visual thinking, Rudolf Arnheim)[31], only to reach the conclusion that the return of the image amounts to a cultural decline.

6. The Pictorial Turn in Education

Children these days are surrounded by physical and digital pictures; indeed working with pictures, and communicating pictures, forms a fundamental dimension of their life-world. Contemporary educational theory and practice still have to catch up with what our children by now do and know. Progressive education, whatever that means, today has to look into a future that in one essential aspect definitely resembles humankind's distant past: it is a world dominated by visual communication and consequently by visual thinking. Progressive education, it seems, now has to take a conservative turn.

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[29] *The Connected Family: Bridging the Digital Generation Gap*, Atlanta, Georgia: Longstreet Press, 1996.

[30] To be fair, on p. 122 he *almost* says something about images (referring to the possibility of weaving together, on the computer, pictures with texts), and in his *Mindstorms: Children, Computers, and Powerful Ideas* (New York: Basic Books, 1980) on p. 96 there is a reference, albeit dismissive, to Jerome Bruner's path-breaking work on the place of images and words in cognitive growth.

[31] New York: Vintage Books, 1994 (1st edition 1982), pp. 72–80.

Jean-Rémi Lapaire

Mental Action as Visible Bodily Performance: An Educational Perspective

> "All the world's a stage,
> And all the men and women merely players."[1]

> "The similarities between the
> stage and the classroom are endless."[2]

1. Introduction

We are born wrigglers and babblers but soon grow into *social vocalizers and movers*, who have internalized the communication system of the society and culture we belong to.[3] Our speech organs learn to produce *articulated sounds*, *intonation phrases* and *structured utterances* (as opposed to free vocalizations), which are strictly conventional in character. Our bodies are socially trained to make *patterned gestures* (as opposed to free movements), which are subject to "social restraints".[4] In short, we develop into social "performers" of language – not just speakers – doing our act, delivering our lines, at every moment, on the *interactional stage*.[5]

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[1] William Shakespeare, *As You Like It*, Act 2, Scene 7.

[2] Robert Tauber, in Ellen Delisio, "Using Acting Skills in the Classroom", *Education World,* 2007 (https://www.educationworld.com/a_issues/chat/chat213.shtml).

[3] Ray Birdwhistell, *Kinesics and Context*, Philadelphia: University of Philadelphia Press, 1970.

[4] John Gumperz, "Linguistic and Social Interaction in Two Communities", *American Anthropologist*, vol. 66, no. 6, Part 2: The Ethnography of Communication, 1964, pp. 137–15.

[5] Erving Goffman, "The Interaction Order", American Sociological Association, 1982 Presidential Address, *American Sociological Review*, vol. 48, no. 1 (Feb. 1983), pp. 1–17.

The inbuilt "performativity" of speech[6] is an essential component of language but an oft-neglected feature in mainstream educational theory, which is loath to treat *learning spaces* as *performance spaces*, pedagogy as dramaturgy, lessons as "face-to-face encounters".[7] The claim made in the present chapter is that a "minimal model of the actor"[8] is still needed in education to empower instructors and their students, to establish the basic "body to body starting point" of the primary teaching-and-learning scenario,[9] to turn all participants into skilled *social actors* making full use of the dramatic resources of speech.[10]

3. Performing Meaning

> "How does one perform a mental action? How does one come to know that one is performing a mental action?"[11]

As we talk, we position our bodies in socio-physical space, just as actors position themselves on the stage. The selves we "present" to others in the daily "dramaturgy" of speech[12] are *sensing*, *moving* and *cognizing selves* that engage in multiple forms of *symbolic action*.[13] As its name suggests, symbolic action is a dynamic process that

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[6] Richard Schechner, *Performance Theory*, 2nd ed., New York: Routledge, 2003.

[7] Dell Hymes, "Toward Ethnographies of Communication", *American Anthropologist*, vol. 66, no. 6, Part 2: The Ethnography of Communication, 1964, pp. 1–34.

[8] Erving Goffman, *Interaction Ritual: Essays on Face-to-Face Behavior*, New York: Pantheon Books, 1967.

[9] Goffman, "The Interaction Order", p. 2.

[10] Robert Tauber and Cathy Sargent Mester, *Acting Lessons for Teachers: Using Performance Skills in the Classroom,* 2nd ed., Westport, CT: Praeger Publishers, 2007.

[11] Michael Brent, "Mental Actions", *PhilPapers*, 2018, https://philpapers.org/browse/mental-actions.

[12] Erving Goffman, *The Presentation of Self in Everyday Life*, New York: Anchor Books, 1959.

[13] Adam Kendon, *Gesture: Visible Action as Utterance*, Cambridge: Cambridge University Press, 2004.

makes a representational use of space and bodily movement. The area in front of the speaker – known as the "gesture space"[14] – is endowed with expressive and ideational properties. It simultaneously functions as *interactional space* (where communicative engagement takes place); *narrative space* (where events are reported, located and connected); and *conceptual space* (where ideas or arguments may be shaped, displayed and connected). Since much of the talk that we produce contains emotive, narrative, and argumentative ingredients, the different spaces merge into a single *semiotic space*, filled with multiple meaningful signs, *verbal*, *co-verbal* and *non-verbal*. Whether we express needs, voice feelings, report events, or analyze experience, we use the discourse space and the animation of our bodies to influence – and possibly control – the addressee's thoughts and behaviour.

Interestingly, the more abstract and complex a topic tends to be, the more speakers resort to *kinetic imagery* in an attempt to make their meanings palpable and accessible. Teachers and scholars characteristically *draw diagrams* to help readers and listeners with difficult or confusing matters. They trace schematic lines and figures that "give shape to concepts" and structural features.[15] Speakers also tend to move more as they grapple with intellectual complexity and engage in problem solving.[16] Thus "gestures of the abstract"[17] are instinctively produced in conjunction with speech, which "help free up cognitive resources"[18]: the movements *fuel the speaker's own thoughts,* while making invisible mental operations *tangible and accessible to others*. Despite considerable interpersonal variation, individual speakers use abstract gesticulation consistently, assigning different spaces

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[14] David McNeill, *Hand and Mind: What Gestures Reveal About Thought*, Chicago: The University of Chicago Press, 1992, p. 86.

[15] Rudof Arnheim, *Visual Thinking*, Berkeley: University of California Press, 1969.

[16] Susan Goldin-Meadow, "From Action to Abstraction: Gesture as a Mechanism of Change", *Developmental Review* 38 (2015), pp. 167–184.

[17] McNeill, *op. cit.*, p. 145.

[18] Susan Goldin-Meadow, *Hearing Gesture: How Our Hands Help Us Think*, Cambridge, MA: Harvard University Press, 2003, p. 166.

(or *loci*) to different ideas, and integrating *gestural action* with *mental action*.[19]

It is important to realize that all the *hand movements* – and more generally the *motion events* – which occur in narrative or argumentative discourse not only *accompany* but also *enact* (perform, accomplish) such fundamental *cognitive operations* as counting items or occurrences, locating events in space or time, establishing the reality of ideas or phenomena, ranking, measuring, linking, limiting, including or excluding, binding or unbinding, opening or closing, comparing or contrasting, growing or diminishing, stopping or continuing, uniting or separating, developing or compressing, exchanging.[20] As this happens, ideas, events and phenomena are *reified* (or *entified*): they are turned into "things" (or "entities") that can be held, pointed to, and fictively manipulated in discourse space.[21] The speaker's hands thus become an extension of his mind, and cognitive processing is symbolically staged as a process of *object creation and manipulation*. As meanings are "manu-factured" before the listener's eyes, as space is used to shape and display objects of conception, intellectual ability becomes a kind of "gesturecraft".[22]

All speakers have the ability to shape and convey meanings by making a symbolic use of space and bodily motion. All are equipped to physically engage in "whole and holistic" acts of representation.[23] This shows not only in "gestures of the abstract" but also in ritual

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[19] See David McNeill, *Gesture and Thought*, Chicago: The University of Chicago Press, 2005; Fey Parrill and Kashmiri Stec, "Gestures of the Abstract", *Pragmatics & Cognition*. vol. 24, no. 1 (2018), pp. 33–61.

[20] Geneviève Calbris, *Elements of Meaning in Gesture*, Amsterdam / Philadelphia: John Benjamins, 2011.

[21] Jean-Rémi Lapaire, "From Ontological Metaphor to Semiotic Make-Believe: Giving Shape and Substance to Fictive Objects of Conception with the 'globe gesture'", *Signo*, vol. 41, no. 70, 2016.

[22] Jürgen Streeck, *Gesturecraft: The Manu-facture of Meaning*. Amsterdam / Philadelphia: John Benjamins, 2009.

[23] Marcel Jousse, *The Fundamentals of Human Expression and Communication: Seven Lectures by Marcel Jousse*, translated and presented by Edgard Sienaert and Joan Conolly, Durban, South Africa: Mantis Publishing, 2005, p. 192.

performances like religious rituals, rites of initiation, sacred or traditional dances which humans *engage in* across cultures.[24] In such bodily practices, space, body parts and physical movement are made to *signify* in an abstract-yet-visible sort of way. This is why all instructors, irrespective of the subject they teach, should strive to develop a deeper understanding of the "active intelligent body" in motion.[25]

A good starting point might be to explore the rich vocal, visual and kinetic potential present in the human body, as was once the case in Classical Rhetoric.[26] Filming, observing and assessing the impact of teachers' gestures – including one's own – might also prove useful, however stressful this might feel at first. Whatever method is chosen, it is important to become conscious of the *physicality* of teaching and learning, to acknowledge the centrality of the *teacher's* and *learners' bodies* in the classroom, both as social and physical entities.[27] Once this has been achieved, lesson plans that integrate kinesthetic activities can be designed and experimented. The following section briefly describes ways in which it can be done, so that participants eventually find themselves "emboldened by embodiment".[28]

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[24] See Marcel Jousse, *L'Anthropologie du Geste*, Paris: Gallimard, 1974; Gunter Gebauer und Christoph Wulf, *Spiel - Ritual – Geste: Mimetisches Handeln in der sozialen Welt*, Reinbek: Rowohlt, 1998; Richard Schechner, "Ritual and Performance", in *Companion Encyclopedia of Anthropology: Humanity, Culture and Social Life*, chapter 22, London: Routledge, 2002, pp. 613–647.

[25] Streeck, *op. cit.,* p. 160.

[26] See Marcus Fabius Quintilianus (Quintilian), *De institutione oratoria* (The Education of the Orator)*,* Liber I, xi-xii (92), an English translation by E. M. Butler, London: William Heineman, 1920.

[27] The teaching situation brings together teachers and learners as *body* corporates – i.e. socially constituted groups of individuals, collectively defined by statutory, rights, duties, positions etc. – *and* individual physical *bodies*. See Bernard Andrieu et al., *Enseigner par son corps*, Paris: L'Harmattan, 2014.

[28] An inspiring phrase used by Robb Lindgren and Mina Johnson-Glenberg in "Emboldened by Embodiment: Six Precepts for Research on Embodied Learning and Mixed Reality", *Educational Researcher*, vol. 42, issue 8, 2013, pp. 445–452.

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Technically, Goffman's "body to body starting point" serves as a foundation for all the workshop sessions that are organized inside school and university buildings, whatever topics and objectives are set. Conditions for a safe and efficient learning environment, where social, physical, or emotional inhibition runs low, are created by:

- developing an awareness of the *immediate presence of others* through the senses (smell, vision, hearing, haptic contact);
- using simple breathing, walking and vocalizing exercises to prepare the body and explore the *workshop space* in its physical and socio-interactional dimensions.

In order to "build knowledge holistically" and "engage the whole human being"[30] sufficient time and attention must be devoted to warming up. Preparatory activities should truly be "preparatory": they should allow participants to transition from one space and learning style to the other, and develop a general state of readiness for the upcoming activities.

The kinesthetic learning scenarios sampled below have been tested in French schools and European universities with success:

- *Linguistic theory in motion*: analyzing the formal (e.g. tense,[31] modality, word formation) and the socio-interactional properties of language (e.g. "in-group vs. out-group membership", "social contact").[32] The idea is to explore abstract notions and

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[30] Jousse, *The Fundamentals…*, p. 209.
[31] Jean-Rémi Lapaire, "The Choreography of Time: Metaphor, Gesture and Construal", in Rosangela Gabriel and Ana Cristina Pelosi, *Linguagem e cognição: emergência e produção de sentidos*, Florianópolis: Insular, 2016, pp. 217–234.
[32] Jean-Rémi Lapaire, "Grammar, Gesture and Cognition: Insights from Multimodal Utterances and Applications for Gesture Analysis", *Visnyk of Lviv University*, Philology Series, issue 52, 2011, pp. 88–103.

processes physically,[33] through guided forms of "replay" or "re-enactment"[34] and "choreographic thinking."[35]

- *Literature in the flesh*: reducing a complex piece of literature to bare essentials, while re-enacting the meaningful events that inspired it.[36] The idea is to design a short but powerful group performance, with successions of tableaux (static or dynamic), expressive pauses, silent kinetic episodes, and dramatic moments (with vocalizations). Participants follow Quintilian's method during the first phase: they compress and simplify the form of the original piece, and elaborate a condensed version. They reflect and learn through the medium of "paraphrase" – an activity mistakenly construed as idle or sterile imitation.
- *Quotations in motion*. Understanding, internalizing *and* projecting chunks of academic or literary discourse. The idea is to fully experience ideas, to internalize and memorize them, and to project them dramatically. Participants experiment with different moods and delivery styles.

In all these activities, *performativity* – the physical enactment of meanings and processes – becomes inseparable from *understanding*. The workshops are systematically assessed using direct observation, online questionnaires and the learning diaries produced by the students. Results show that embodied strategies of this kind produce higher levels of *group cohesion* and *teacher–learner interaction*; encourage *peer proximity*; stimulate *concentration* and *personal reflection*, while feeding *student curiosity* and *creativity*. Although work-

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[33] Jean-Rémi Lapaire, "Visuo-Kinetic Explorations of Grammar", in András Benedek and Kristóf Nyíri (eds.), *Images in Language: Metaphors and Metamorphoses*, Frankfurt/M: Peter Lang, 2011, pp. 41–55.

[34] In his anthropological theory of gesture, Marcel Jousse uses the French word *rejeu* – literally a "replay" of something.

[35] William Forsythe, "Synchronous objects as a choreographic object", an interview recorded at The Ohio State University, 2009.

[36] Jean-Rémi Lapaire and Hélène Duval, "*To the Lighthouse* (1927): A Choreographic Re-elaboration", *Miranda*: 15|2017, https://journals.openedition.org/miranda/10898.

shops are rarely perceived as indispensable for comprehension and memorization, they are overwhelmingly experienced as *stimulators* and *eye-openers*. Remote, difficult or uninspiring topics are viewed differently after the sessions: a sense of "life" and "proximity" is instilled, which eventually makes dull subjects more attractive and meaningful. Further testing is still necessary to get a fuller picture and is currently under way.

Concluding Remarks

Unlike politicians, news readers, talk show hosts and other professional communicators, teachers and university professors tend to behave as *undertrained public speakers*, whose vocalizations, bodily moves and interactional strategies largely operate out of awareness. Few have received serious instruction in voice production and articulatory phonetics, movement dynamics and gesture semiotics, pragmatics and performance theory, during their formative years. Their limited awareness of the *physicality* and *performativity* of speech prevents them from making a richer and more creative use of space with their students. The part played by bodily motion in abstraction and reasoning is accordingly downplayed. As Jousse convincingly argues, the entire sensing and performing human body – rhythmically moving and vocalizing – is the prime medium of perception, expression and understanding. Our Western education system has developed a form of "bookish ethnicity" that values writing and reading skills. Higher forms of knowledge tend to be equated with the stativity of the printed letter – "*scientia cum libro*".[37]

To a large extent, Jousse's criticism still holds: *texts* (printed or digitalized) remain the dominant mediators between reality and

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[37] Marcel Jousse, *The Anthropology of Geste and Rhythm*, 2nd revised ed., edited from the original French [1974–78] by Edgard Sienaert and translated in collaboration with Joan Conolly, Durban, South Africa: Mantis Publishing, 2000, p. 26.

understanding. As a result, more time is spent on *exegesis*[38] – the critical interpretation of written material – than on the *observation* of the world around us, and too many learners still find themselves "mummified in sarcophagi of printed pages and books".[39]

The "living and gestural element", the ability to memorize and "replay", which are conspicuous in children and highly valued in oral cultures, are still largely devalued in mainstream Western education. It is only in early childhood that learners are treated as "living beings". The instruction they receive during their preschool years is aptly conceived and designed as "*scientia in vivo*".[40] But the animation of the young learning body is not tolerated for very long. The moment reading and writing are introduced in the curriculum – typically around ages 5-6 – printed or digitalized texts take over, and literacy reigns supreme. Although greater sensory stimulation can now be achieved by using tablets and computer systems, *motor disengagement* remains the norm almost everywhere in the teaching room. This results in the *petrification of knowledge and learning*: "For us, science has become gravely serious. It has become immobile. When one goes to introduce oneself to a savant, one always imagines a grave immobility."[41]

Can this change? Will this ever change? A recent survey of "effective teacher policies" which was commissioned by the *Organization for Economic Co-operation and Development* (OECD 2018),[42] does not mention anything like *scientia in vivo*. Not a single reference is made to "embodiment" (or "embodied cognition") as a "unifying perspective" for education,[43] although one would assume that

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[38] *Exegis*, as understood in this paper, denotes any kind of interpretative process that applies to written texts. This ranges from a student working out the meaning of a friend's SMS or Twitter posts to the scholarly interpretation of Scripture.

[39] Jousse, *The Anthropology of Geste and Rhythm,* p. 28.

[40] *Ibid*., p. 26.

[41] Jousse, *The Fundamentals…*, p. 52.

[42] OECD. *Effective Teacher Policies: Insights from PISA.* PISA: OECD Publishing, 2018.

[43] Arthur Glenberg, "Embodiment as a Unifying Perspective for Psychology", *Cognitive Science,* July 2010, pp. 586–596. While acknowledging that humans

"students" and "teachers" interact physically in the classroom, and "enact knowledge through (some) activity of their bodies" – if unconsciously.[44] The report rightly insists that teachers are "the most important resource in today's schools".[45] It also makes a number of useful claims: that teachers are not "interchangeable workers in some sort of industrial assembly line"[46]; that they "can change lives"[47]; that recruiting "better teachers" is "crucial to improving the education that schools provide".[48] But what makes teachers "better"; what improves the "quality" of the training they get, the lessons they give and the "professional development" they achieve; what makes strategies for correcting "student disadvantage" more efficient; and what might make "classroom experience" feel more intense and special, remain thoroughly unspecified at the *physiological* and *phenomenological* levels. Unsurprisingly, the word "body" – which occurs four times in the 168-page report – is not used even once in its primary physical sense. Yet there is some hope in the fact that "high performing countries" invest more in "teacher-preparation programs" and lifelong learning. Teachers are expected to behave like "inquisitive professionals"[49] and attend regular "workshops organized by the school".[50] In our experience, such workshops can provide precious opportunity for teachers to reflect on the wonders that the *thinking-and-moving bodies* of teachers and learners can achieve in learning space. For change is definitely possible and there is indeed a future for enhanced educational practice using bodily action to fuel, sustain or improve mental action. But the road leading to that change is still a long and sometimes solitary one to travel.

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are "symbolic creatures", Glenberg stresses the necessity of grounding symbols "in something other than additional symbols", namely "the sensory, action, and emotion systems of our bodies" (p. 587).

[44] Lindgren and Johnson-Glenberg, *op. cit.*, p. 445.

[45] OECD, *op. cit.*, p. 168.

[46] *Ibid.*

[47] *Ibid.*, p. 32.

[48] *Ibid.*, p. 168.

[49] *Ibid.*, p. 131.

[50] *Ibid.*, p. 32.

FROM IMAGE TO WORD:
RHETORIC COMES TO AGE

Petra Aczél

A New Rhetoric Again?
Consolidating the Paradigm

1. Prologue

"In 1960, I was at a post-lecture reception in Oxford. Chatting over drinks with a don, I asked him what subject he taught. 'Chiefly eighteenth-century literature. What is your field?' – 'Basically it's rhetoric, though I'm officially in "English". I'm trying to complete a book that will be called *The Rhetoric of Fiction*.' – 'Rhetoric!' He scowled, turned his back, and strode away."[1]

This scene depicted by Wayne Booth in his book *Rhetoric of Rhetoric* is something many rhetoricians have come to be familiar with. Rhetoric? – are we asked back with a tone that mixes a bit of surprise, pity and suspicion – and what is it actually?

Rhetoric – through recurring fatal phases and revivals – has seemingly been reduced to a rather derogatory term by the end of the 20th century. Apparently, this judgment still lingers on in contemporary everyday and academic discussions. In the general and popular understanding rhetoric is about the manipulative use of language to coerce people to believe and do what they would otherwise not believe or do. It is the practice of stirring emotions and anger with no essential rational input, it is the spurious verbalism and declamation that exploits an unnatural mode of communication. Practically, the intellectual goal is to set it aside, or get beyond all what is rhetoric. There are several reasons offered for this decline by George Ken-

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[1] Wayne C. Booth, *The Rhetoric of Rhetoric: The Quest for Effective Communication*, Malden, MA: Blackwell Publishing, 2004, p. viii.

nedy[2] or Bender–Wellbery.[3] Explanations blame either the lack or – surprisingly – the expansion of democracy and the ways modern scientific thought and methods have overdominated human and political life.[4]

All the same, contemporary views of rhetoric as exclusively the art of verbal manipulation are drastically out of line with the richness of what has been formulated as its theory and practice. They are drastically out of line with a long tradition of getting to know the world (inquiry, education) in which rhetoric had had a central role for centuries. In fact, it is a forgetful misconception of a faculty which once served as the universal knowledge of public life. So, 58 years after the above-mentioned meeting of Booth's one would still feel challenged to devote a chapter to rhetoric, particularly a "new rhetoric". However daring it is, the present chapter aims to consider the exigence for a new rhetoric and outline its conceptual frame. Vague as it may sound I endeavour to future-proof rhetoric, this two and a half millennia old faculty, based on its capaciousness and specifically, its visual-sensual character. By future-proofing – a strategy applied recently to technology, architecture, organizations, media and disciplines[5] – we can identify, preserve and reformulate elements of rhetoric in the strategic procedure of looking into the future and developing methods/steps to minimize its obsolescence and maximize hidden potentials. Our questions here will be the following: Can rhetoric withstand the test of time with its present understanding, theory and practice? Will it be able to fight the accusations and suspicion regarding its manipulative nature, non-demarcated scientific bounda-

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[2] George Kennedy, *Classical Rhetoric and its Christian and Secular Tradition from Ancient to Modern Times*, Chapel Hill, NC: The University of North Carolina Press, 1980.

[3] John Bender and David E. Wellbery, "Rhetoricality: On the Modernist Return of Rhetoric", in J. Bender – D. E. Wellbery (eds.), *The Ends of Rhetoric: History, Theory, Practice*, Stanford, CA: Stanford University Press, 1990, pp. 3–39.

[4] James Crosswhite, *Deep Rhetoric: Philosophy, Reason, Violence, Justice, Wisdom*, Chicago, IL: The University of Chicago Press, 2013.

[5] David Birchall and George Tovstiga, *Future Proofing – Strategy 3.10,* series Express.Exec., Oxford: Capstone, 2002.

ries, sclerotic tradition, seemingly senseless categories – as stylisticians of the Belgian Groupe μ put it in 1970[6]? What are the points of synergy that will enhance its future potential?

The answer proffered in this paper is that rhetoric can only withstand the test of time, escape its own obsolescence and decay, its derogatory understanding if we investigate and rediscover its hidden features, the visual and the sensual. There is indeed an urging need for a "sensual turn" in rhetoric that shall bring us back to its original, holistic conception of the human condition. Without that rhetoric remains a set of formal rules to structure and perform speeches in classrooms, a suspicious practice of argumentation or persuasion that political spins analyze, and an outcast academic field that attempts to boast with its age but has nothing to say to the age. Rhetoric is needed in the future only if man is needed, as Henry Johnstone, Jr. put it.[7] In that aspect rhetoricians are responsible for even more than the discipline itself.

In what follows, first, pivots in recent rhetorical theory will be addressed, then the subsequent conundrum of the faculty and finally, the visual-sensual capabilities of it will be discussed to outline and consolidate the paradigm of a new, visual-sensual rhetoric.

2. The Rhetorical Turn

Despite modern academic distaste for what rhetoric has to offer, the last 60 years has not passed without pivotal periods in its theorizing. We may arrange these turning points under the collective term of rhetorical turn,[8] a movement in human sciences motivated by the redis-

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[6] Jacques Dubois, Francis Edeline, Jean-Marie Klinkenberg, Philippe Minguet, François Pire, and Hadelin Trinon, *Rhétorique générale*, Paris: Larousse, 1970.

[7] Henry W. Johnstone, Jr., "The Philosophical Basis of Rhetoric", in G. Hauser (ed.), *Philosophy and Rhetoric in Dialogue: Redrawing Their Philosophical Landscape*, University Park, PA: The Pennsylvania State University Press, 2007, pp.15–26, this phrase on p. 25.

[8] Herbert W. Simons, "Introduction: The Rhetoric of Inquiry as an Intellectual Movement", in Herbert W. Simons (ed.), *The Rhetorical Turn: Invention and Per-*

covery of rhetorical argumentation and the reaction against objectivist quests for certainty in scientific method, that is, academic positivism.[9] "Rhetoric" – James Boyd White assumed in 1985 – "in the highly expanded sense in which I speak of it, might indeed become the central discipline for which we have been looking for so long…"[10] Though heavily language-based, this turn opened up a view to see better the overarching nature constitutive of rhetoric.

Especially, the year 2018 marks the 60th anniversary of two seminal rhetorical treatises. One is *Traité de l'argumentation – la nouvelle rhétorique* (*The New Rhetoric*) by Chaïm Perelman and Lucie Olbrechts-Tyteca, the other is Stephen E. Toulmin's *The Uses of Argument*.[11] Both center around rhetorical argument as a social,

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suasion in the Conduct of Inquiry, Chicago, IL: The University of Chicago Press, 1990, pp. 1–31.

[9] "The tendency to think of rhetoric as a failed science is especially powerful in the present age, in which such determined attempts have been made to elevate, or to reduce, virtually every discipline to the status of true science. The idea of science as perfect knowledge has of course been recently subjected to considerable criticism, both internal and external. It is now a commonplace that scientific creativity is imaginative, almost poetic, that scientific knowledge is only presumptive, not certain; and that science is a culture that transforms itself by principles that are not themselves scientific." (James Boyd White, "Law as Rhetoric, Rhetoric as Law: The Arts of Cultural and Communal Life", *University of Chicago Law Review*, vol. 52, no. 3 [1985], pp. 684–702, this passage on p. 688.)

[10] *Ibid.*, p. 701.

[11] Gaonkar divides the literature of the rhetorical turn into two groups: the explicit and the implicit. "By *explicit* rhetorical turn, I refer to those works that explicitly recognize the relevance of rhetoric for contemporary thought and where rhetoric is used as a critical and interpretive method. The works of the following scholars, including those generally identified as the new rhetoricians (Chaïm Perelman, Kenneth Burke, Richard McKeon, I. A. Richards, and Richard Weaver), may be placed in this category: Wayne Booth, Paul de Man, Walter J. Ong, Ernesto Grassi, Paolo Valesio, Northrop Frye, Tzvetan Todorov, Harold Bloom, Hugh Dalziel Duncan. … Finally … there are also texts that evince signs of an *implicit* rhetorical turn. These are texts whose authors, while relatively unaware of the rhetorical lexicon, seem to be groping for a vocabulary that could adequately characterize the tropological and suasory aspects of the discursive practices that remain occluded from disciplinary consciousness." Gaonkar takes Thomas Kuhn's *The Structure of Scientific Revolutions*, Paul Feyerabend's *Against Method*, Steven

practical tool and a meeting of minds, and they both contribute to the birth of the "new rhetoric project".[12] Nevertheless, it is Perelman and Olbrechts-Tyteca's *New Rhetoric* that explicitly revives rhetoric via the discussion of social argumentation. They did rediscover rhetoric's millennia-long history of concern with reasoning about practical matters in conditions of uncertainty. Their radical rhetorical move with the valorization of audience proved to be a fundamental shift from pure logic to social-psychological settings. As they stated: all argumentation develops in a relation to an audience.[13]

They also reintroduced presence into the philosophical-logical treatment of rhetoric, that is, a visual-rhetorical capacity of speaking to bring something before the eye of the audience and thus argue strongly. Presence is of paramount importance in the technique of argumentation. With it the speaker centers the hearer's consciousness as it helps certain elements to stand out against other. Perelman and Olbrechts-Tyteca emphasizes that

> Effective presentation that impresses itself on the hearer's consciousness is essential not only in argumentation aiming at immediate action, but also in that which aspires to give the mind a certain orientation, to make certain schemes of interpretation prevail…[14]

Presence has at least five effects:[15]

Toulmin's *The Uses of Argument* and Gadamer's *Truth and Method* to be members of this category. (Dilip Parameshwar Gaonkar, "Rhetoric and Its Double: Reflections on the Rhetorical Turn in the Human Sciences", in Herbert W. Simons [ed.], *The Rhetorical Turn* [cf. note 8 above], pp. 341–366, this quotation on pp. 352 –353.)

[12] James Crosswhite, "The New Rhetoric Project", *Philosophy & Rhetoric*, vol. 43, no. 4 (2010), pp. 301–307.

[13] Chaïm Perelman and Lucie Olbrechts-Tyteca, *The New Rhetoric: A Treatise on Argumentation*, transl. by John Wilkinson and Purcell Weaver, Notre Dame, IN: University of Notre Dame Press, 1969, p. 5.

[14] *Ibid.*, p. 142.

[15] Louise A. Karon, "Presence in 'The New Rhetoric' ", *Philosophy & Rhetoric*, vol. 9, no. 2 (1976), pp. 96–111.

- First, it is a felt quality in the audience's consciousness.
- Second, it fixes the audience's attention.
- Third, its agent is imagination.
- Fourth, its purpose is to initiate action.
- Fifth, it serves argumentation and not style.

Even though Perelman and Olbrechts-Tyteca are dwelling exclusively upon verbal argumentation, they do tackle the role of imagination and consciousness[16] in logical operations with their emphasis on presence. Thus, without overtly mentioning visuality in their work, they undoubtedly started to free rhetoric from the suffocating criticism of the advocates of the objectivist-rational mode of discourse. Also, they managed to integrate psychological (visual) elements into the analysis of argumentation by emphasizing the importance of the actual (temporal) situation and the meeting of the minds. Furthermore, they initiated a new rhetorical thinking: as a matter of fact, due to *La nouvelle rhétorique*, the expression of "new rhetoric" had become viral, appearing everywhere where knowledge, human condition, language and communication were meant in academic letters. Unsurprisingly, with this success emerged the most recent conundrum of rhetoric.

3. Big or Little?

This problem also stems from the 1960s when narratives of rhetoric as a general-globalized study of knowledge, consciousness and communication began to rise. The conflict between the so called big and little rhetorics has been grounded on the tension between episteme and doxa, truth and knowledge, consciousness and certainty. It has

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[16] As Antonio Damasio asserts, consciousness is the feeling of what happens and it entails immediacy and importance. Furthermore there is a relationship between image and consciousness that comes from our ability to feel that we have created images. (Antonio Damasio, *The Feeling of What Happens: Body and Emotion in the Making of Consciousness*. New York: Harcourt, 1995, p. 26.)

grown out of the contrasts of rhetoric as either thin or thick, classical or modern, supplement or substantive.

With big rhetoric "we refer to the theoretical position that everything, or virtually everything, can be described as 'rhetoric-al'".[17] It is in fact the popularization of rhetorical studies and a real-ization of the rhetorical turn in other disciplines. Big rhetoric as a globalized discipline states that rhetoric is ubiquitous, infiltrating the human-social existence. By contrast, little rhetoric is a set of formal rules and operations to compose arguments and figurative speech, a system of functional/structural elements of language. The big rhetoric – little rhetoric problem was crystallized in a debate greatly fueled by Dilip Parameshwar Gaonkar's essay reflecting on the two-faceted rhetorical turn.[18] In Gaonkar's view we either understand rhetoric as a set of clearly demarcated production practices of verbal, persuasive texts; as a practical art, as little rhetoric. Or we think of rhetoric as having no enclosed or demarcated identity of its own. In this sense, rhetoric is pervasive (but parasitic) and broad enough to refer to all dimensions of the human condition. Advocates of little (preserved) rhetoric call for the restoration of the classical discipline, stating that big rhetoric is an epidemic "severely undermining rhetoric's self-representation as a situated practical art"[19]. Representatives of big rhetoric – unbound by the canonized rhetorical tradition – urge the reinterpretation of rhetorical history with the intention to see and show that rhetoric is universal. They seek for rhetoric's disciplinary generosity while little rhetoricians would preserve its formal rigidity. Gaonkar is a devoted critic of the popularization and universalization of rhetoric, using the "si omnia nulla" argument, that is, if something is everything it is nothing. When it becomes too broad and hence, trivial, it will turn out to be a "ubiquitous but dull accompaniment".[20]

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[17] Edward Schiappa, "Second Thoughts on the Critiques of Big Rhetoric", *Philosophy & Rhetoric*, vol. 34, no. 3 (2001), pp. 260–274, this passage on p. 260.
[18] Gaonkar, *op. cit*.
[19] Dilip Parameshwar Gaonkar, "The Idea of Rhetoric in the Rhetoric of Science", *Southern Communication Journal*, vol. 58, no. 4 (1993), pp. 258–95, see esp. p. 292.
[20] *Ibid*., p. 293.

The enduring big-little rhetoric debate still calls for a resolution that avoids taking part with either side. A resolution that neither limits nor broadens the scope of rhetoric, which neither forgets nor exaggerates the capacities of the ancient discipline. As neither the stretching nor the shrinking will presumably make rhetoric last for two and a half more millennia, we should again consider long-forgotten points of convergence, new possibilities of synergy to future-proof the discipline and found the frames of a possible new "new rhetoric". This is, in fact, what Perelman and Olbrechts-Tyteca did when they went deeper into rhetoric and argumentation 60 years ago, reviving and reintegrating outcast elements of the art of rhetoric. We may not need a broader rhetoric, nor would we want a narrower one. We shall call for a deeper rhetoric: a deep rhetoric.[21] Deep rhetoric is conceived of here as an approach with which suppressed original elements and characteristics of rhetoric are revisited and made convergent on a coherent theoretical stand. The present proposal is to find a new theoretical synergy of rhetoric in the visual-sensual.

4. Deep Rhetoric, Visual-Sensual Rhetoric: A New Rhetoric

An instrumentality, technology or medium itself can not solely offer a point of convergence for a deep, that is, new rhetoric. If rhetoric is only applied to the visual-sensual realm, if it is mainly about the persuasive modes present in designing images and pictures then it will be a little rhetoric. If a visual-sensual rhetoric endeavours to universally serve as a lexicon to describe every and all facets of the complex discursive phenomena of visual-sensuous spheres that would be a big rhetoric. Consequently, only if the visual-sensual is discovered as an inherent, original feature within, only if visual is recognized as an inevitable part of rhetoric itself can a visual-sensual rhetoric be a deep

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[21] James Crosswhite was the first to use this expression terminologically and paradigmatically in the title of his 2013 book, *Deep Rhetoric* (cf. note 4 above). Though clearly different in the approach, my paper does not intend to refute any of his assumptions, it would rather add the visual facet to them.
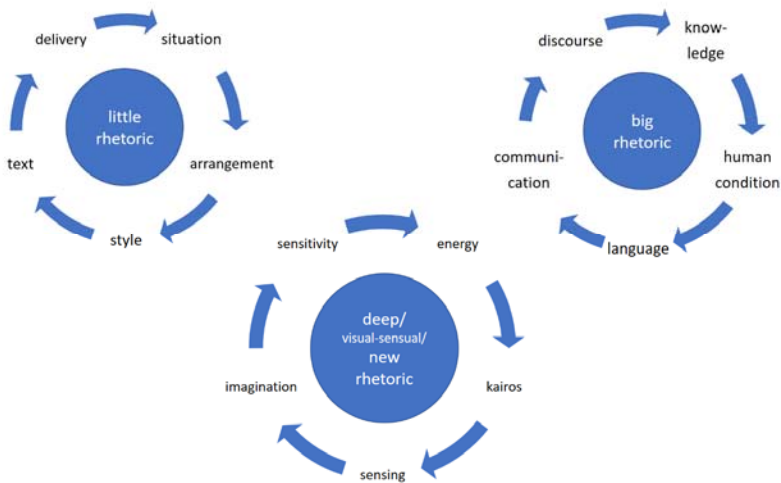
Figure 1: Conceptual frames of little, big and deep (visual-sensual/new) rhetorics

and thus a new rhetoric. Rhetoric is capable of showing its multimodal richness within – that is the realization that can support its future proofing. In what follows, characteristic and constitutive elements of a deep/visual-sensual/new rhetoric will be addressed according to their – rather disparate – discussions in recent rhetorical scholarship (the characterizing concepts are displayed in comparison to framing notions of little and big rhetoric in Figure 1.)

Some rhetorical classicists and philologues have been eager to reidentify and highlight hidden characteristics in the ancient faculty. Among them is George Kennedy who formulates a thought-provoking new definition of rhetoric in his introduction to the first edition (1991) of his translation of Aristotle's *Rhetoric*. Kennedy presumes that rhetoric is "the energy inherent in emotion and thought, transmitted through a system of signs, including language, to others to influence their decisions or actions."[22] Rhetoric – as he sees it – is

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[22] George Kennedy (transl. & ed.), *Aristotle On Rhetoric: A Theory of Civic Discourse*, Oxford: Oxford University Press, p. 7.

not the transmission of that energy; it is the energy that is so transmitted and it is already working in plants and animals. With this assumption comes a deeper understanding of the "rhetorical situation as an ecology; persuasivity (to pithanon) as the circulation of 'viral intensities' or energies through groups; that circulation specifically as an energy-exchange, a circulatory or reticulatory flow of energy-transfers", a "somatic exchange"[23]. This energy transfer, the somatic exchange is worked out through various semiotic systems[24], including not just verbal but visual and bodily signs.. Rhetoric for Kennedy is not exclusively a physical energy, it is as much a force that is created by the labour of experiencing and coding, as it is the resource offered by the audience when it pays attention.[25] Kennedy goes on to identify some universal rules of the rhetorical code in his article on the evolution of general rhetoric. Almost all the rules he sets are are about priority: rhetoric is prior to speech, to writing, it is prior to intentionality and beliefs about meaning and audience impact, and among the traditional rhetorical canons, delivery (acting) is prior to the others (invention, arrangement, style, and memory). Rhetoric, clearly, comes first – presumably because it is a phenomenon of nature. The logic pressed into Kennedy's notion of rhetorical energy is that such energy exceeds verbal language. This realization brings forward a somatic, sensuous, visual accounting of rhetoric.

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[23] Douglas Robinson, *A Deep Ecology of Rhetoric in Mencius and Aristotle: A Somatic Guide*, New York: SUNY Press, 2016, p.1.

[24] "Rhetorical energy in its simplest form is conveyed by volume, pitch or repetition; more complex forms of rhetorical energy include logical reasons, pathetic narratives, metaphor and other tropes, or lively figures of speech such as apostrophe, rhetorical question, or simile. All communication carries some rhetorical energy … there is no zero degree rhetoric." (George Kennedy, *Comparative Rhetoric: A Historical and Cross-Cultural Introduction*, New York: Oxford University Press, 1998, p. 215.)

[25] Rhetoric is "the emotional energy that impels the speaker to speak, the physical energy expended in the utterance, the energy level coded in the message, and the energy experienced by the recipient in decoding the message." (George Kennedy, "A Hoot in the Dark: The Evolution of General Rhetoric", *Philosophy & Rhetoric*, vol. 25, no. 1 (1992), pp. 1–21, this passage on p. 2.)

Parallelly with the appearance of energy, the concept of kairos reenters contemporary rhetorical investigations. Kairos, "the ancient conception of time that attends to degrees of propitiousness"[26] has an important role in rhetoric. It refers to the quality of time rather than its quantity providing "thus rhetoric's timing, for the quality, direction, and movement of discursive encounters depend more on the forces at work on and in a particular moment than on their quantifiable length"[27]. Kairos introduces a different logic than the abstract rational. It brings with itself an immanent awareness of the emerging situation – an immersion into the world and into the occasion within a community. Kairos is the opportunity the communicator discerns, and the energy is with what the sensing of that opportunity can be rechanneled.

Debra Hawhee – with the rereading and reinterpretation of classical ancient rhetorical texts – is also giving fascinating accounts of rhetoric starting with sense-perception and aesthetics. Her works are revelatory in terms of sensing, experiencing and feeling within rhetoric. She highlights how much rhetoric was originally about both the bodily and the discursive expressions of the compounded self. The task of the rhetorical practice was once to combine "the visible with the articulable"[28], to pair sensing with knowing and speaking. "Seeing and telling were mutually constitutive in expression"[29] and in the ancient Athenian culture it was rhetoric that had the task to reactualize of what was sensed and seen. Seeing, hearing and saying were modalities of appearance that entered into a relation within rhetoric. Indeed, there is much more to be regained from the classical texts. As Daniel Heller-Roazen asserts "the ancients spoke little of consciousness and a great deal of sensing",[30] and sensation was held in high regard in rhetoric. Rather than a practice of speech-making it

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[26] Debra Hawhee, *Bodily Arts: Rhetoric and Athletics in Ancient Greece*, Austin, TX: University of Texas Press, 2004, p. 65.

[27] *Ibid.*, p. 66.

[28] *Ibid*., p. 163.

[29] *Ibid*., p. 163.

[30] Daniel Heller-Roazen, *The Inner Touch: Archaeology of a Sensation*, New York: Zone Books, 2007, p. 21.

was more of an art concerned with a sense of timing, sensing, imagination and articulation, it was a sensitivity improved and expressed.[31] John Poulakos and Steve Whitson in their article on the "sensorial theory" of rhetoric say that "an aesthetic rhetoric counts on, attends to, and takes into account the body and its senses; an epistemic rhetoric tries to bypass them, but cannot".[32]

So energy, kairos, sensing rediscovered in ancient texts reopen a discussion – about a different, long forgotten instrumentality in rhetoric: the visual, the sensual one. A "sensorium of rhetoric"[33] is there for us to revisit. During this visitation shadowed notions of rhetorical theory and practice come up again proving to be essential in understanding how the non-epistemic or non/semi-cognitive operate in rhetorics. These are concepts of imagination and imaging: phantasia (the inner sense of the speaker and the receiver, that connects imagination, cogitation and memory), ingenium (the creative force in meeting, cognizing and expressing the world based on sensing and seeing), enargeia (the force that guide speakers to create vivid descriptions and to make their audiences picture what is said in order to persuade; vivification, actualization), ekphrasis (the rhetorical description that unfolds before the audience's eyes) or the ars memorativa (the semi-conventional, picture- and space-based system of memory).[34]

There is, indeed, a true and inherent potential for a visual-sensual rhetoric to be formulated as a new rhetoric in the sense of a deep rhetoric.

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[31] For rhetorical sensitivity see Roderick P. Hart and Robert E. Carlson and William F. Eadie, "Attitudes Toward Communication and the Assessment of Rhetorical Sensitivity", *Communication Monographs,* vol. 47, 1980, pp. 1–22.

[32] Steve Whitson and John Poulakos, "Nietzsche and the Aesthetics of Rhetoric", *Quarterly Journal of Speech*, vol. 79, no. 2 (1993), pp. 131–145, this passage on p. 132.

[33] Debra Hawhee, "Rhetoric's Sensorium", *Quarterly Journal of Speech*, vol. 101, no. 1, pp. 2–17.

[34] Petra Aczél, "Beyond Persuasion – Rhetoric in a Virtual World", in A. Benedek and Á. Veszelszki (eds.), *Virtual Reality – Real Visuality*, Frankfurt/M.: Peter Lang Edition, 2017, pp. 29–40, see esp. pp. 35 f.

5. Epilogue

How far have we reached in future-proofing rhetoric? By recognizing the lasting impact of the the rhetorical turn and the new rhetoric project on rhetorical scholarship in the last 60 years we have come to the realization of the problem of big and little rhetorics. As for the preservation of rhetorical theory we suggested that instead of universalizing or restricting rhetoric, we should go deeper into it. Not as purists but as reinterpreters of an exceptionally rich discipline. We argued for the reinforcement (by ways of rediscovery) of what is originally within its theory and thus have a deep rhetoric (a new rhetoric) as an alternative to big or little. Appointing the visual-sensual domain of rhetoric as the realm of convergence, we identified key concepts capable of synergy, such as energy, sensing, kairos, characters of imagination and sensitivity to present a conceptual frame for a visual-sensual rhetoric, a deep and thus new rhetoric. The humble aim of this chapter was to highlight the central role rhetoric can play in realizing the visual-sensual capacities of human communication and to yield a future vision for new rhetorics. A vision based on the visual, not the verbal.

Eszter Deli

Product, Process, Procedure
A New Theoretical Framework for Visual Rhetoric in Disaster News Communication

1. Introduction

"A picture says a thousand words" – as the famous and quite trite saying goes. However, as every cliché, this quotation also encapsulates an elementary truth: it "says more". It says and does not show, depict or decorate; it says, so it alleges, states, and argues. However, the concerns of Toulmin,[1] Johnson[2] or Gombrich[3] are not unfounded: the "correct" understanding, interpretation, and decoding of an image do depend on a number of factors which can make a picture ambiguous, unclear and implicit in nature. The writing of this paper was inspired by the aim to assess the controversies and ambiguities surrounding visual rhetoric.

My hypotheses include:

1. Visual rhetoric satisfies all three notions of argumentation: product, process and procedure.

2. Therefore visual rhetoric should never be considered as a paradox, but as a flourishing, independent discipline.

3. Natural disasters and men-made catastrophes are depicted differently within the media.

4. No linguistic translation is needed when comprehending these images.

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[1] Stephen E. Toulmin, *The Uses of Argument*, New York: Cambridge University Press, 1958.

[2] Ralph H. Johnson, *Why "Visual Arguments" Aren't Arguments*, Department of Philosophy, University of Windsor, http://web2.uwindsor.ca/courses/philosophy /johnsoa/visargtext.htm (January 2004).

[3] Ernst H. Gombrich, "The Visual Image", *Scientific American*, vol. 227, no. 3 (September 1972), pp. 82–96.

2. The Concept of Argumentation

Defining argumentation is problematic in many ways. We often think of it as a synonym for proof, sometimes we identify it with debate, persuasion, or manipulation, but the fact that many continue to support the attachment of reasoning to a purely verbal code also raises numerous questions. For a truly long time, the language of reasoning, explication and explanation had only been regarded as a language determined by words. However, as Nyíri suggests in his paper "The Picture Theory of Reason"[4], people think primarily in images and only secondarily in words. The following scholars also propose a more comprehensive and more permissive approach to argumentation:

According to Petra Aczél, argumentation is a kind of a reasoning that alters a thought or action and justifies the position,[5] while al-Musawi argues that the science of reasoning deals with arguments that people use to support their beliefs and convictions in order to influence others' thoughts and actions.[6] Daniel J. O'Keefe distinguishes between argumentation as "making an argument" and argumentation as "having an argument", where the former refers to a type of text, and the latter indicates an interaction.[7] This distinction led to the emergence of a two-way approach: argumentation as a result or product and argumentation as a process. Joseph Wenzel, however, proposes a triadic approach to argumentation, completing the former

[4] In Berit Brogaard and Barry Smith (eds.), *Rationality and Irrationality*, Wien: öbv-hpt, 2001, pp. 242–266, cf. https://www.academia.edu/16652571/The_Picture_Theory_of_Reason.
[5] Petra Aczél, in Tamás Adamik, Anna A. Jászó and Petra Aczél, *Retorika,* Budapest: Osiris Kiadó, 2005, p. 326.
[6] Muhsin J. al-Musawi, "Arabic Rhetoric", in Thomas O. Sloane (ed.), *Encyclopedia of Rhetoric*, Oxford: Oxford University Press, 2006, p. 42.
[7] Daniel J. O'Keefe, "The Concepts of Argument and Arguing", in J. Robert Cox and Charles A. Willard (eds.), *Advances in Argumentation Theory and Research*, Carbondale: Southern Illinois University Press, 1982, pp. 3–23.

two concepts with argumentation as a procedure.[8] The product, process, procedure triad has since become widely accepted and the present essay is committed to prove that a visual content satisfies all three concepts of reasoning without the need for linguistic translation.

2.1. Argumentation as a Result (Product)

An argumentative text differs from a descriptive or a narrative one in that it sets out a certain position, which it seeks to justify. The examination of this type of text is based primarily on the principles of formal logic, and with the help of formal logic one can determine the validity and correctness of the proof.[9] The most basic element and organizing principle of proof is called syllogism, that is, propositional statements with distinct premises that lead to the conclusion. If the form of the argumentation is incorrect and the conclusion is not proven, then the syllogism itself is also invalid. The validity therefore applies to the form and is independent of the content of the argument.[10] Argumentation as a product offers a fairly free view: it does not deal with the creator of the argument, it does not deal with their purpose and nor does it deal with whom the argument was addressed to. It is basically a concept deprived of its contextual elements, which neglects or does not primarily deal with communicative aspects.

Visual rhetoric regarded as a product or artefact is no more than the actual picture created by rhetors when they use visual symbols for communication.[11] We may also regard it as a tangible instance of creative activities such as paintings, advertisements, or

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[8] Joseph W. Wenzel, "Perspective on Argument", in William L. Benoit, Dale Hample and Pamela J. Benoit (eds.), *Readings in Argumentation*, Berlin/Boston: De Gruyter, 1992, pp. 121–143

[9] Aczél, *op. cit.,* p. 326.

[10] Al-Musawi, *op. cit.,* p. 43.

[11] Sonja K. Foss, "Theory of Visual Rhetoric", in Ken Smith, Sandra Moriarty, Gretchen Barbatsis and Keith Kenney (eds.), *Handbook of Visual Communication: Theory, Methods, and Media*, Mahwah, NJ: Lawrence Erlbaum Associates, 2005, p. 145.

buildings. The artefact-oriented approach therefore reinforces the same concept which is offered by the product-type approach: a context-independent, result-centred approach that focuses on a product, work of art or object, that is, an artefact.

2.2. Argumentation as a Procedure

The basis of the argumentation as a procedure view is that argumentation differs from the other means of expressing disagreement by obeying certain rules that control the discourse.[12] In recent years, the argumentation as a procedure perspective has been applied to more informal arguments too. The approach called pragma-dialectics was introduced by theorists at the University of Amsterdam, led by Eemeren and Grootendorst.[13] The pragma-dialectical perspective of the aforementioned researchers is based on speech act theory; however, Douglas Walton's theory of argumentative fallacies is also relevant to the procedural approach.[14] Last but not least, Aczél reminds us that approaching argumentation as a procedure strengthens our rule recognition capabilities but distracts the awareness of the content, hence it is not the "what" but the "how" that grabs our attention.[15]

The procedure-based approach of argumentation therefore indicates that argumentation is operated by dynamics, procedures, patterns and operations. Within the field of visuality, these controlled processes are understood in the same way, too, when a certain visual element is interpreted in relation to another element, examining them in their contexts, interactions and contradictions. The examination of

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[12] Aczél, *op. cit.*, p. 348.

[13] Frans H. van Eemeren and Rob Grootendorst, *A Systematic Theory of Argumentation: The pragma-dialectical approach*, New York: Cambridge University Press, 2004.

[14] Douglas Walton, *A Pragmatic Theory of Fallacy*, Tuscaloosa: University of Alabama Press, 1995.

[15] Petra Aczél, *Médiaretorika* [Media Rhetoric], Budapest: Magyar Mercurius, 2012, pp. 35–36.

visual elements, therefore, gives an answer to how the possible focuses and perspectives of the images are set by the creator of the image.

2.3. Argumentation as a Process

The development of the argumentation as a process view came about due to the interpersonal communication research that has revived since the 1970s. This approach focuses on the conflicting and opposing ideas as well as their solutions that arise in everyday communication. In this sense, argumentation can be interpreted as a type of interaction. The argumentative process view sees the validity of argumentation as a functional concept, and thus considers persuasion as an intent or effect.

This pragmatic, effect, intention and rhetoric based perception of argumentation is also valid in the case of visuals. Images are capable of carrying meaning intended by their creators in an evocative, compressed way, thus engaging and interacting with the audience.[16] Just think of the images in the news, which do not transmit information, but convey events and values, thus ensuring the possibility of experiencing and expressing opinion. The primary purpose of the process-based approach to visual argumentation is to show a certain topos (meaning a source of reason where arguments are stored to prove one or another point)[17]: based on a picture I may think of a person being a victim and a villain, and this is due to the rhetorical nature of the argumentation.

The above three aspects of argumentation are closely related indeed: argumentation is based on a regular order of formation, and is realized as a process within human interaction.[18] This theoretical framework of argumentation has motivated the present paper, which argues that visual rhetoric – thanks to its logical traditions, pragma-

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[16] *Ibid*, p. 102.
[17] Richard A. Lanham, *A Handlist of Rhetorical Terms*, Berkeley and Los Angeles: University of California Press, 1991, p. 169.
[18] Aczél in Adamik et al. (cf. note 5 above), p. 348.

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dialectical notions and rhetorical thinking and effectiveness – satisfies all three concepts of argumentation.

3. Pilot Case: Saigon Execution Photo, 1968

In order to illustrate the system-based theoretical framework outlined above, my paper presents the triadic approach to visual rhetoric through a pilot case. Out of context, we see a picture of a cold-blooded murderer killing an innocent civilian with exceptional dispassion (Figure 1). What the picture does not tell, however, is that the

Figure 1[19]

prisoner, Nguyen Van Lem, was a commander of a Viet Cong revenge squad having massacred dozens of unarmed civilians and members of the National Police. Therefore – due to his war crimes

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[19] See http://www.newseum.org/2015/05/12/pulitzer-prize-photography-saigon-execution.

and guerrilla activities – his execution was, in fact, legitimate. The image immediately became a symbol of the ruthless barbarism of the Vietnam War. The photograph haunted General Nguyon Ngoc Loan all his life. His medical treatment was denied by several institutions after the war, and he was tried to be deported from the USA due to the pressure of human rights activists. The general eventually died of cancer in the United States in 1998, aged 67. Eddie Adams photographer received a Pulitzer Prize in 1969 for this shot. Later he stated: „Two people died in that photograph: the recipient of the bullet and General Nguyen Ngoc Loan. The general killed the Viet Cong with his pistol; I killed the general with my camera."[20]

Product: As a product, we see a black and white image with two middle-aged males in the foreground. Their resolution is sharp. In the background, there are other people, houses, trees and vehicles, but they are blurry and can hardly be seen. The camera shows the events from the front, the two actors almost fill the frame. The one man holding the gun is wearing a military outfit, and he is standing with an outstretched arm. The other male figure appears in a casual checkered shirt, while his hands are tied behind. The general's face is shown turning away from the camera, while the person receiving the shot is presented frontwise.

Procedure: As to its procedural approach, the the logic of the camera is clear. It does not show the face of the general, for he is merely a cruel, cold-blooded executor. It is not his feelings or his motives which are in the centre, but the fear and death of the prisoner. This point of view is therefore a totally suggestive one, as it places the viewer into the story and emotions of the prisoner. The focus is on the pistol glistening in the hands of the general, and on the face of the suffering prisoner.

Process: Finally, as regards the processual approach it is indisputable that the photograph gives the impression of the murder of an innocent man. Its primary intention is to present the brutality of the general (and that of the entire Vietnam War). The recording evokes feelings of compassion and sorrow in the viewer, as the for-

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[20] See https://www.bbc.com/news/world-us-canada-42864421.

mer two aspects form the illusion of an innocent man. The topos displayed in the picture is clearly the topos of suffering. Linguistic translation was not at all needed, the picture speaks louder than words.

4. Visual Rhetoric in Disaster News Communication

In my research, the two chosen cases included Hurricane Katrina (2005), claiming 1833 lives,[21] and the terrorist attack against the Bataclan Theatre (2015), claiming 89 lives.[22] I have picked 75-75 images by random selection from sources such as *The New York Times*, *The Huffington Post*, *The Daily Mail*, etc.

As far as the product approach goes, my codes included: the *presence of persons*, their *age* and sex, their *colour* (black or white), foreground and background, *outfit*, mise en scène and portrait of *dead bodies*.

For the procedure, I examined: the angle of the camera, *movements, facial expressions*, the proximity of the camera, special effects and the time factor.

Last but not least, as for the process approach I analyzed: the intention of the image, the effect of the image and the *topos* it depicts.

Due to the constraint of space, the present paper is only able to explore the codes marked in italics. Having analyzed all 150 pictures based on the given codes I suggest that the visualization of Hurricane Katrina, which is regarded as a natural catastrophe, and the terrorist attack against the Bataclan, which is a man-made catastrophe, do show a number of differences.

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[21] The Data Center, Aug. 26, 2016, cf. https://www.datacenterresearch.org/data-resources/katrina/facts-for-impact.

[22] *The Daily Mail*, Nov. 15, 2015, cf. http://www.dailymail.co.uk/news/article-3319244/Video-reveals-horrific-moment-terrorists-opened-fire-crowd-music-fans-Bataclan-killing-89-people-shows-musician-hiding-drums-escape.html.

4.1. The Product-based Approach

Twenty more images depicted people in the case of the Bataclan attack than in the case of the Hurricane. It is noteworthy that images of

Figure 2[23]

Figure 3[24]

Hurricane Katrina mainly show middle-aged black men (Figure 2), while the Bataclan shootings mainly showed young, white people (Figure 3), which is particularly interesting considering such a multicultural, ethnically diverse capital city. Out of the 75 photos, a total of two showed non-white people, therefore one can conclude that the press portrayed the terrorist act as a bloody revenge against the European white population.

As far as their outfits go, we can find official police clothing on 38 occasions when it comes to the Bataclan attack, while we only see officers during rescue and help in 13 images in the Katrina case.

In the photos of Hurricane Katrina, only 6 of the 75 photographs showed the motif of death – out of these, 2 merely implicitly, while images of the massacre showed dead people in 11 pictures.

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[23] Cf. https://www.africanglobe.net/headlines/black-orleans-10-years-post-katrina.
[24] Cf. http://www.dailymail.co.uk/news/article-3318972/100-minutes-stunned-world-moment-bomber-blew-horrific-slaughter-concert-hall-account-carnage-Paris-massacre-unfolded.html.

4.2. The Procedure-based Approach

When it comes to movements, the images of Katrina depicted some active ones in 25 images, while this number is as great as 44 in the case of the Bataclan pictures.

Figure 4[25]   *Figure 5*[26]

As regards the facial expressions of the people, the most common characteristics were agony and hopelessness in both cases, but suffering and shock were also frequently presented (Figure 4). The difference, however, was that in the case of Hurricane Katrina, two such categories were possible to be distinguished, which did not appear at the Bataclan shootings at all (Figure 5), with the resolute (4 photos) and the smiling, optimistic facial expressions (6 photos).

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[25] Cf. https://edition.cnn.com/2013/08/23/us/hurricane-katrina-statistics-fast-facts/index.html.
[26] Cf. note 24 above.

4.3. The Process-based Approach

Coming to the end of my analysis, in the light of the storm, loss, suffering and hope were the three most popular categories. The last to-

Figure 6[27]   *Figure 7*[28]

pos, hope, suggests the divine presence of God, who gives a helping hand and fills us with the faith of a better life (Figure 6). The assassination included suffering, loss, and death as its most popular topoi. However, it is worth mentioning – represented by only one image less than the topos of death – that the topos of belonging together was also an important factor in the case of the massacre, which did not appear in the case of the hurricane at all (Figure 7).

5. Conclusion

In all, we can conclude that there is a significant difference in the way the media present cases when Mother Nature overwrites the normal course of human life, and when men, the incarnate Evil turns against himself. The examination of the two cases has also revealed that the 3P (product, procedure, process) visual rhetorical method is a suitable means of analysis for a holistic examination of a given case,

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[27] Cf. note 25 above.
[28] Cf. note 24 above.

not merely considering the layout logic of the images, but also regarding their procedures and their induced effect.[29]

"Arguing is good. Persuading is important. Affecting is a responsibility."[30]

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[29] See also: Eszter Deli, *A vizuális retorika triadikus koncepciója – Elméleti keret és esettanulmányok: Vizuális retorika a katasztrófa-hírközlésben* [The Triadic Concept of Visual Rhetoric – Theoretical Framework and Case Studies: Visual Rhetoric in Disaster News Communications]. Doctoral Dissertation, Budapest, 2018.

[30] Petra Aczél, *Neked van igazad – Érvelés és meggyőzés a gyakorlatban* [You are right – Arguing and persuasion in practice], Budapest: Tinta kiadó, 2017, p. 6.

Irma Puškarević

The Culture of Typography
Combining Rhetorical Resources with Typeface Design

"Typography exists to honour content."[1]

1. Introduction

The main function of language is communication with others. However, the communication phenomenon cannot be purposeful unless an educational information system is established. Eco elaborates on this notion by observing that the social–language interaction, when paired with Jakobson's communication functions, indicates a presence of a code.[2] In this view, a "system of knowledge" must be transformed into a "system of codes" in order for the emitted information to be understood. The advantage of this idea of a code, as an established form, made its entry into a world of culture in which a "mechanism of communication" was formulated. Once such concept appeared in the linguistic realm, numerous ideas about various levels of codes and communication contexts followed. For instance, in the light of the pictorial turn, the conception of signs and codes was taken from the literary and linguistic context and put in use to address communication that uses visual resources (e.g. graphics, icons, typefaces). We then see Barthes[3] and Eco[4] use underlying principles of codifi-

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[1] Robert Bringhurst, *The Elements of Typographic Style*, Point Roberts, WA: Hartley & Marks, 2004.

[2] Umberto Eco, "Codice", in *Enciclopedia Einaudi*, vol. III, Milano: Giulio Einaudi, 1968, pp. 243–281.

[3] Roland Barthes, "Rhetoric of the Image" (1964), repr. in Barthes, *Image – Music – Text*, London: Fontana Press, 1977.

[4] Umberto Eco, *La struttura assente: Introduzione alla ricerca semiologica*, Milano: Bompiani, 1968.

cation of rhetorical modes to analyze and interpret visual images in print advertisements.

Fast forwarding to the current state of the communication environment – the reign of the new media – what becomes evident is the proliferation of typefaces and type manipulations alongside images. In this environment, the visual aspect of the written text is put to the foreground, and thus typography, with all its subtle and exaggerated constructs, is transposed from the area of legibility to a meaning-making system. The communication environment has already embraced visual rhetoric as its integral part due to the ubiquity of visual images in the past decades. As the result, a viewer is faced with the rhetoric of pictorial media all through the day, predominantly through advertising imagery. However, if we were to apply the so far accumulated knowledge of the effectiveness of visual rhetoric in advertising images on propaganda visuals in use today (image with connotative typography) we would be faced with the lack of understanding as to how appropriately to apply these tools so that they effectively serve intentional communication. Particularly, if we were to apply visual rhetoric to typeface design, we would be lost in uncharted waters. Therefore, the principle focus of this paper is to propose a conceptual framework for structuring the typographic form in order to confront the challenges of communication in the new visual world. In this regard I will address specific issues by submitting typography to the analysis of the meaning it may construct: How do we define letterform with rhetorical potential, i.e. how does meaning get into the type? Does rhetorically charged typography have the same effect as the rhetoric of the image? To answer these questions, I am going to review briefly the basics of typography and its relationship with a viewer. Then I am going to discuss the rhetoric of typography through the means of analysis of theoretical and empirical data. Finally, I am going to introduce a methodology for structuring the typographic form in order to explore the effects of typography in specific communication contexts.

2. Typography – A Medium of Expression

Typography came to the fore with the art of the moving type. Suddenly, the world of thought became legible[5] and was regarded as the visual representation of verbal language. If words came forth as the result of gestures, typography came forth as the result of the forms of calligraphy.[6] For centuries, giving shape to type forms had been in the service of the printed book and, consequently, longer passages of text. In this sense, the traditional quality of typefaces had been durability. This particular quality reflected legibility of a typeface and its functional properties. However, the aesthetic properties of a typeface, which during the reign of the printed book had been depicted only in a form of decorative initials,[7] instigated the communicative power of typography in the new age of industrialization. Lupton provides an insightful remark on the matter:

> With the rise of industrialization and mass consumption in the nineteenth century came the explosion of advertising, a new form of communication demanding new kinds of typography. Type designers created big, bold faces by embellishing and engorging the body parts of classical letters. Fonts of astonishing height, width, and depth appeared – expanded, contracted, shadowed, inlined, fattened, faceted, and floriated.[8]

Clearly, the typographic tradition is constantly challenged due to technological and cultural advancements with an outcome of the typefaces' aesthetic properties being pushed to the very edges of form-giving. When it comes to expressing additional meaning using

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[5] Adrian Frutiger, *Typefaces: The Complete Works*, ed. by Heidrun Osterer and Philipp Stamm, Basel: Birkhäuser, 2009.
[6] Ellen Lupton, *Thinking with Type: A Critical Guide For Designers, Writers, Editors, & Students*, Princeton Architectural Press, revised and expanded edition, 2010.
[7] Phil Baines and Andrew Haslam, *Type & Typography*, London: Laurence King Publishing, 2005.
[8] Lupton, *op. cit.*, p. 23.

type, one path leads to a subtle, skilled typographer's touch to the shape of the letterform. The other path adds technological resources to this process. Every technological advancement provides greater freedom of manipulation that adds to the distinctive stylization. The most recent technological change the practice of typography has encountered is the breakthrough of electronic i.e. digital channels of communication. Keedy points out that the most important contribution of computer technologies is the democratization of information that provided, so far, the most innovative playground for type design.[9] Digital integration of lettering and type has amplified the possibilities of the functional and aesthetic properties of letterforms. If we consider that the visual side of typography is always on display, both the functional and aesthetic properties inevitably become an interest to research and discussions regarding the effects of typography. For instance, the advantage of the field of advertising for the exploration of visual rhetoric lies in the fact that "in advertising the signification of the image is undoubtedly intentional… … these signifieds have to be transmitted as clearly as possible"[10]. Even though Barthes's statement referred only to the visual image as a signified element, the contemporary communication environment invites some other elements into play, like typography. In the following section the relationship between the art of typography and the discipline of rhetoric will be further explored.

3. Typography and Visual Rhetoric

Practitioners of the art of typography have long known what scholars in the 20th century experimentally explored, that letterforms have the potential to express a mood or a symbol. As Frutiger recognizes, type forms may present the expression of a signature or a cipher.[11] In this

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[9] Jeffery Keedy, "The Rules of Typography According to Crackpots Experts", *Looking Closer* 2 (1997), pp. 27–31.
[10] Barthes, *op. cit.*, p. 152.
[11] Adrian Frutiger, *Signs and Symbols – Their Design and Meaning*, London: Ebury Press, 1998.

sense, the "imagistic" capacity of typefaces is brought to the table and graphic designers have observed that a printed word may have two levels of meaning. The first level is the "word image" where the idea is represented by the word itself, and the second level is the "typographic image" where the viewer perceives the idea through the holistic visual experience. Correspondingly, the expressiveness of the type form can be compared to relations within the speech realm where also two levels of communication can be distinguished. The first level relates to the content of the message being spoken while the second level relates to the intonation of the speaker's voice. The intonation colours the message with additional meaning by stressing the specific words or expressing a mood or emotion. In typography, such expression is materialized through the design of the typeface. Variations or stylization of the basic letter structure in the sense of its proportions, size or shape contribute to the typeface's meaning-production. The concept of the "typographic image" puts the art of typography in a realm of symbolic discourse. Here, the discipline of rhetoric is called upon. If a typeface should at any particular point in communication present a signified, we must endeavour to establish a system of reading of the typographic sign. The tradition of the discipline of rhetoric certainly qualifies in this aspect. After the post-Bauhaus approach to form-giving, which attempted to define a universal language, and in the light of the pictorial turn, the connection between rhetoric and the visual image has been discovered. Under such conditions, visual rhetoric was re-invented[12] and became the resource in the discipline of graphic design for solving visual problems.

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[12] Visual rhetoric as a term describes visual imagery within rhetoric. "Visual rhetoric" refers on the one hand to a rhetorical practice that, directly or indirectly, exploits visual elements, and on the other hand to a specific approach within the theory of rhetoric, emphasizing the essential significance of the visual dimension. Based on the two aspects, that of memory and metaphor, Petra Aczél argues that vision is not, and has never been, excluded from the discipline of rhetoric. (Aczél, "Enchanting Bewilderment: Concerns for Visual Rhetoric", in András Benedek – Kristóf Nyíri [eds.], *Images in Language: Metaphors and Metamorphoses*, Frankfurt/M.: Peter Lang, 2011, pp. 85–98.)

However, the study of a connection between rhetoric and the visual aspect of a type form is still at its infancy.

Empirical studies with the aim of exploring the rhetoric of typography show that participants perceive different typeface characteristics based on their prior experience with those typefaces, but also based on the typefaces' formal attributes.[13] Once these formal attributes become more detailed and elaborative, the analysis of the effects of typefaces' meaning potential emerges as relevant. According to the empirical data, the visual aspect of verbal language can influence information processing in the early stages of word recognition.[14] The study of Childers and Jass provides a conceptual framework of the effects of typeface semantic properties in advertising and thus becomes relevant in this discussion.[15] Based on their framework, when viewers perceive advertisements with verbal content, particular functional features of typefaces (the formal attributes such as line, weight, orientation, and size) aid the word recognition process. After the word has been successfully identified, the semantic qualities of the typeface may be activated. Drawing upon these views and previous findings, Childers and Jass conclude that visual properties of words are processed in the early stages of the word recognition process, where these properties form a semantic code independent of the semantic nature of the verbal content. In other words, the verbal content can be "dressed" in different "costumes" of type styles. The general conclusions of findings on the visual rhetoric in typeface design can be listed as follows: (i) viewers consistently perceive typefaces to have different personalities, (ii) typefaces influence information processing, and (iii) certain typefaces are appropriate for certain communication contexts. The relevance of these findings lies in the fact that the authors took into consideration typographic dimensions during

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[13] Jo Mackiewicz and Rachel Moeller, "Why People Perceive Typefaces to Have Different Personalities", in *International Professional Communication Conference: Proceedings*, 2004.

[14] Miles A. Tinker, *Legibility of Print*, Ames: Iowa State University Press,1963.

[15] Terry L. Childers and Jeffrey Jass, "All Dressed Up With Something to Say: Effects of Typeface Semantic Associations on Brand Perceptions and Consumer Memory", *Journal of Consumer Psychology*, vol. 12, issue 2 (2002), pp. 93–106.

stimuli design, such as typeface characteristics (typeface design elements) and spacing characteristics (physical distance between elements)[16]. However, stimuli design across studies has not been exposed to a systematic view of the type manipulation process. Therefore, building upon findings of the studies on typeface design effects and effects of visual rhetoric in advertising images, I will attempt to propose a systematic categorization of principles for effectiveness of rhetoric in typography.

4. Conceptual Framework for Achieving an Effectiveness of the Rhetoric of Typography

In an effort to develop a systematic method for effective expressiveness of typeface properties, one must first consider the principles of rhetoric. Aczél claims that resources of the traditional system of rhetorical speech cannot be systematically re-interpreted to meet the needs of defining visual rhetoric. The argumentative power of the visual image seeks its own rhetorical conceptualization. However, rhetoric's scope can be widened to provide a purposeful framework for visual communication by borrowing communicative, symbolic and strategic characteristics from the ancient discipline. In this light, I am here considering McQuarrie and Mick's conceptual taxonomy of rhetorical figures in advertising language.[17] Their approach provides a criterion of the departure from normal usage where rhetorical figuration is divided according to the regularity or irregularity of the form. Figure 1a depicts their conception of the gradient of deviation, i.e. complexity of the form, combined with Eshes and Lupton's[18] vis-

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[16] Michael S. McCarthy and David L. Mothersbaugh, "Effects of Typographic Factors in Advertising-Based Persuasion: A General Model and Initial Empirical Tests", *Psychology & Marketing*, vol. 19, nos. 7–8 (2002), pp. 663–691.

[17] Edward F. McQuarrie and David Glen Mick, "Figures of Rhetoric in Advertising Language", *Journal of Consumer Research*, vol. 22, no. 4 (1996), pp. 424–438.

[18] Taking the conclusions gathered from empirical findings and classic rhetorical discipline as a guide, Eshes and Lupton make an experiment of students' typographic assignments to provide an encyclopedic-like type of handbook for the

ual references to typeface figuration. The complexity of the form, as can be observed, stands out as an important variable, so the further challenge lies in detecting a functional relationship between the complexity variable and letter forms, i.e. typefaces. Here two approaches should be considered – Frutiger's[10] letter matrix and Dixon's[19] descriptive typeface classification. Frutiger believed that letters have universal features. It is this idea that inspired him to develop a model of the common letter skeleton. The core principle of this model is a neutral shape of a letter which is presentable when stylistically different typefaces blend together (Figure 1b). The role of the common skeleton in the proposed framework is to provide a base for the end letter form.
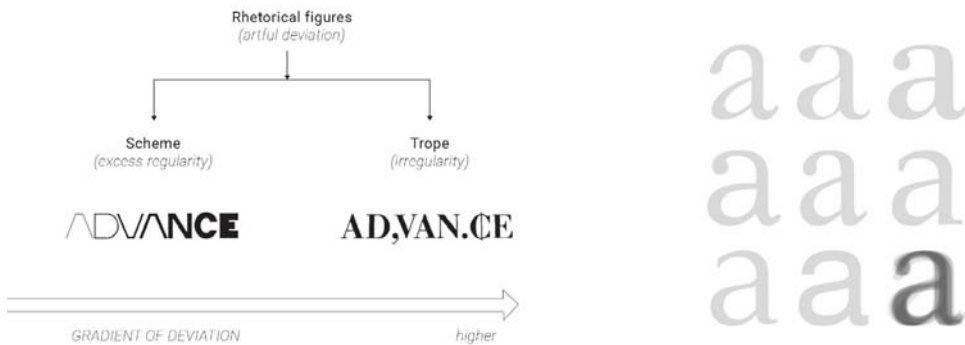
Figure 1: a) Gradient of deviation of rhetorical figuration; b) Graphic representation of the common letter skeleton

Once the base unit is set, the constitutive elements in a form of formal attributes can be utilized. These attributes, as Dixon explains, carry descriptions about typeforms, such as serif detailing, construction, shape, contrast and so on, which can serve as an analytical tool,

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rhetoric of typography. See Hanno Ehses and Ellen Lupton, "Rhetorical Handbook: An Illustrated Manual for Graphic Designers", *Design Papers* 5 (1988).

[19] Catherine Dixon, "Describing Typeforms: A Designer's Response", *InfoDesign: Revista brasileira de design da informação* [Brazilian Journal of Information Design], vol. 5, no. 2 (2008), pp. 21–35.

Model of common skeleton

Manipulation of the master form

WEIGHT
MODELLING
PROPORTION
KEY CHARACTERS
TERMINALS
CONSTRUCTION
SHAPE
DECORATION

quantitative perspective

TYPOGRAPHIC IMAGE

Semiotic principles

Visual rhetoric principles

qvalitative perspective
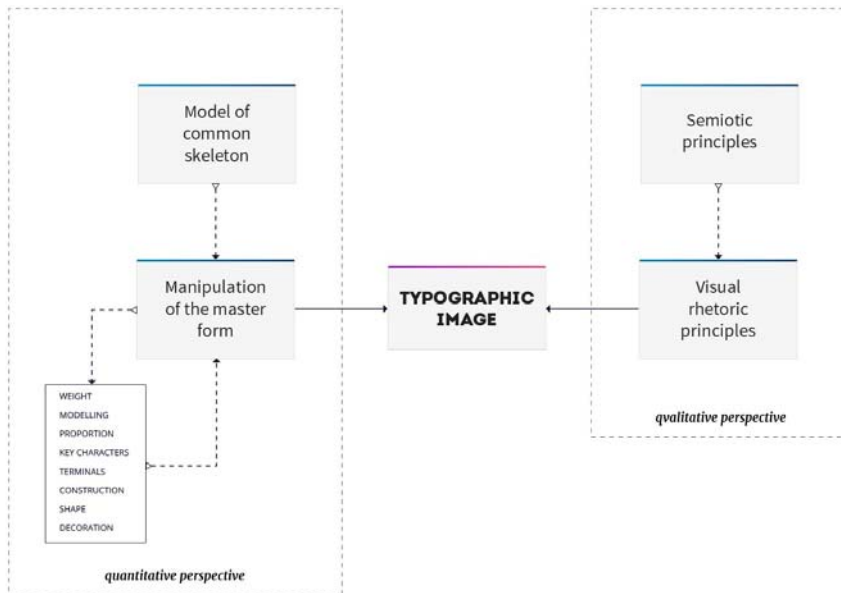
*Figure 2: Framework proposition for the effectiveness
of the rhetoric of typography*

but also as building elements in typeface figuration. I have pointed out these elements so as to prepare a discussion of the quantitative aspect of a framework which encompasses formal attributes of letterforms and their tactical manipulations. As constitutive elements of a letter, the formal attributes construct the meaning which is then perceived as the typographic image. These objective approaches can be complemented with qualitative perspectives of typographic expressiveness (Figure 2).

Qualitative aspects of the framework engage semiotic and visual rhetoric principles as resources for meaning-making. Even though both discourses belong to the realm of symbolic discourse, each uses slightly different resources to analyze/construct meaning. Semiotic principles considered for typographic meaning are connotation and

metaphor.[20] Connotative aspect in a typeform can be established through the "import" of signs into a specific domain where the meaning is formed on the grounds of associations (historical, cultural). Certain typeforms are unable to provide the meaning through connotations. In this instance, metaphor can be used as another semiotic principle accompanied by Peirce's concepts of "icon" and "index".[21] Typographic meaning is either constructed when a type form signifier looks like that which it signifies, or the meaning is implied by some typographic feature. The descriptive aspect of the framework includes visual rhetoric as well. Here, Aczél's views on contemporary interpretations of visual rhetoric may be utilized. She outlines, as referred to above, the visual in rhetoric in terms of two perspectives. The first focuses on memory and the second on the metaphoric dimension. Memory, as a resource, can be divided according to the imagistic and text-based aspects. The former recalls the information based on stored mental images and the latter using arrangement and pedagogical analysis of information. On the other hand, metaphor is considered as an interpretative resource which uses representation in an image to shift from the particular to the general. Revealing hidden visual capacities of rhetoric, Aczél demonstrates that the discipline of rhetoric is not a simple but complex system of layered constructs for an effective meaning-making. In conclusion, the typographic image owns its meaning-potential to both quantitative and qualitative aspects of rhetorical effectiveness exploiting visual communication using typographic resources.

5. Conclusion

Visual rhetoric was once the answer to the challenges of the pictorial turn when images proliferated in the communication environment. Also, this environment invites visual rhetoric to help analyze mean-

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[20] Theo Van Leeuwen, "Typographic Meaning", *Visual Communication*, vol. 4, no. 2 (2005), pp. 137–143.
[21] Nina Nørgaard, "The Semiotics of Typography in Literary Texts: A Multimodal Approach", *Orbis Litterarum*, vol. 64, no. 2 (2009), pp. 141–160.

ing constructed through typographic resources. Even though the picture superiority effect shadows the verbal cues and its "typographic image", still, in the new visual age typography stands as an almost equal communication resource. The graphic design, as the principal host of the typographic discipline, is the communication framework where visual resources are employed to construct meaning. These resources can be most effectively put to use if they are separated according to their quantitative and qualitative characteristics. Quantitative dimensions are most valuable for the practice of graphic design, where image with its expressiveness is paired with expressiveness of a typeface. These dimensions enable concrete steps for the quantitative measurement of the effectiveness of this union. On the other hand, the qualitative dimensions of typographic expression underline the complex syntax of the symbolic discourse through which multiple meanings are assigned to a type form. For this reason, the present chapter endeavoured to demonstrate how both qualitative and quantitative dimensions of the rhetoric of typography need to coexist to contribute to effective typographic expression, particularly in the realm of advertising where a functional communication system exists with the goal to capture consumers' attention.

Michalle Gal

Visual Metaphors and Cognition: Revisiting the Non-Conceptual

1. The Challenge

Let us look at Pablo Picasso's *Head of a Bull* from 1943 – a beautiful example of visual metaphor (Figure 1). It ought to be labeled "metaphor" because its structure is such that a predicate, "being a bull", travels from its *source* domain, animals, to a foreign domain to be attributed to a *target*, the saddle and handlebar of the bicycle in this case, to structure it anew. A bull, a metaphorical one but nonetheless a bull, is created. I opened with a visual metaphor because I think the visual is the paradigmatic kind of metaphor, rather than the conceptual or the linguistic ones. We will soon advance to these kinds to show that they as well are based on visuality.

Figure 1: Pablo Picasso, Head of a Bull, 1943.

The terms "target" and "source" were introduced to the discussion on metaphor in the aftermath of the 1980 publication of Lakoff

and Johnson's canonical book *Metaphors We Live By*.[1] Respectively replacing the terms "tenor" or "focal point", and "vehicle" or "frame", they are now commonly used in the literature. Lakoff and Johnson, as is well-known, offer a conceptual-cognitivist theory of metaphor, claiming that metaphor does not merely originate in the conceptual mind, but is also conceptual through and through. They do use the term "structure" to describe the metaphorical faculty. For example, when analyzing ARGUMENT IS WAR, which they label a "conceptual metaphor", they argue that "we don't just *talk* about arguments in terms of war. We can actually win or lose arguments. … Many of the things we *do* in arguing are partially structured by the concept of war."[2] Regarding THEORIES ARE BUILDINGS, they claim: "The parts of the concept BUILDING that are used to structure the concept THEORY are the foundation and the outer shell."[3] However, for Lakoff and Johnson, the metaphor itself dwells in the cognitive epistemological stratum and is merely reflected in our literal language or experience or reality. They define metaphor as "*understanding and experiencing one kind of thing in terms of another*", rather than as a linguistic unit, let alone a visual or a material one.

By contrast, I offer a formalist, non-cognitivist and non-conceptualist theory of metaphor as a matter of composition and of visuality or materiality. Metaphors, I argue, belong to the visual-ontological sphere. They both originate and are structured there. What enables us to understand one concept in terms of another is the compositions and structural possibilities that the visual sphere offers us: the visuality of buildings whose properties are applied to theories. Those are applied as predicates to structure "theory" anew – e.g., for theory to have foundations and shell, to be solid and well supported,

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[1] The terms first occur in George Lakoff and Zoltán Kövecses, "The Cognitive Model of Anger Inherent in American English", Linguistics Department, University of California at Berkeley, May, 1983, and are further exploited in the 2nd edition of George Lakoff and Mark Johnson, *Metaphors We Live By*, London: The University of Chicago Press, 2003.

[2] *Metaphors We Live By,* 2nd ed., pp. 4 f.

[3] *Ibid.*, pp. 52.

or alternatively to collapse and fall apart. "Theory" is consequently accepted as a (peripherical or outlandish) member in the category of buildings, and a metaphor is created.

Lakoff and Johnson use the term "structure" to describe what I perceive as two metaphorical stages: they claim that "the human conceptual system is metaphorically structured" as well as that "our concepts structure what we perceive, how we get around in the world."[4] The first use unexpectedly implies that there is some epistemological stratum which precedes the conceptual system. This is inconsistent with their conceptualist theoretical framework. More importantly, the second use just leads into the wrong direction. Metaphor is indeed a structure. But, if at all, the concepts of "theory-building" or "argument-war" are enabled by external-visual metaphorical compositions, rather than the other way around. These compositions reconfigure theory or argument and attach them to the categories of buildings or wars. Unintentionally, this order is logically necessitated by Lakoff's and Johnson's model itself. The possibility of the metaphor "argument is dance" (rather than war) in a different culture – where the participants are performers who aim to reach a balance rather than rivals who aim to win – is typical. And if metaphors are socially, conventionally, or physically bound, then understanding or conceptualizing metaphor comes second, and metaphorical external-visual structure or composition, i.e., the metaphor itself, comes first. Hence conceptual metaphors are actually not the most challenging case for the Visuality of Metaphors argument.

2. Metaphors and Non-Conceptualism

Drawing on the non-conceptualist terminology and arguments that were formulated in the course of the last two decades by Christopher Peacocke and Sean Kelly, one may take the proposition above a bit further: not only is it the case that metaphors are not founded on an internal conceptual system, but it also holds that what renders the

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[4] *Ibid*., pp. 6 and 3.

bicycle parts a bull's head (source) in Picasso's visual metaphor cannot be captured conceptually. It is a composition. It is the way in which the saddle and the handlebar, the target of the metaphor, are positioned, as well as their interrelations. Moreover, this composition is endowed with what Nelson Goodman accurately named "syntactic density" or "repleteness" to characterize the function of "aesthetic symbols" – where every single feature of the symbol counts: position, line, thickness, shape, etc.[5] In my view, repleteness and density are the aesthetic sub-categories of the general fine-grainedness of the experienced reality and its representational content. Peacocke asserts that those are beyond conceptual content. Mostly relevant here is his emphasis that in describing the fine-grained phenomenology, "we need the notion of the experience representing things or events or places or times, given in a certain way, as having certain properties or as standing in certain relations, also as given in a certain way". For example, Ernst Mach's cube "that can be perceived either as a square or as a regular diamond".[6] Kelly adds that the main features of non-conceptual perceptual content are "the dependence of a perceived object on the perceptual context in which it is perceived, and the dependence of a perceived property on the object it is perceived to be a property of."[7]

By contrast, and in line with Lakoff and Johnson, prominent conceptualists such as John McDowell and John Searle claim that all experiences with representational content, namely, a content which represents a perception of an external thing, have conceptual mental

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[5] Nelson Goodman, *Ways of Worldmaking*, Indianapolis: Hackett, 1978, p. 68.

[6] Christopher Peacocke, "Does Perception Have Nonconceptual Content?", *The Journal of Philosophy*, vol. 98, no. 5 (2001), pp. 239–264, the quoted lines on pp. 240 f.

[7] Sean D. Kelly, "The Non-Conceptual Content of Perceptual Experience: Situation Dependence and Fineness of Grain", *Philosophy and Phenomenological Research*, vol. 62, no. 3 (May, 2001), pp. 601–608, the quoted lines on p. 602.

content.[8] For them, a perception of a thing depends on possessing its concept. Then again, in characterizing aesthetic ontology and perception, especially of metaphors, it is evident that the conceptualist approach will not suffice.

So, while conceptualists claim that the representational content of experience is always conceptual, non-conceptualists claim that there is a content that is not captured by concepts, yet at the same time representational, intentional, and specified. This non-conceptualist terminology is useful, perhaps necessary, for the discussion of aesthetic ontology and perception. The features of non-conceptual content are the very features that characterize their ontological derivation, namely, aesthetic compositions and their abilities to invoke a specific perception of it. It is no doubt the case of a phenomenon such as visual metaphor.

In *Head of a Bull* the compositional elements exemplify the chain of dependence of perception: the reconstruction of the saddle and the bar depends on their perceptual context. The properties of shape and form which are shown forth to be perceived, which Goodman labels "exemplified properties", depend on the object they are properties of and its position. This all culminates in some kind of a bull's head, which can be somewhat classified as such. Though it is peripheral in the category of bull's head, it is both structured and perceived as one. It is a bull's head and at the same time it is not. This dialectical attribution of a predicate, this dialectical construction which is accompanied with the viewer's aesthetic experience, cannot be fully conceptualized *as long as the metaphor is alive.* My very attempt to literally describe it here is actually harmful, since it forces linguistic or conceptual order on the *visual*, freezes the non-conceptual living and productive visual metaphor into conceptuality and turns it into a dead metaphor at most.

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[8] John McDowell, *Mind and World*, Cambridge, MA: Harvard University Press, 1994; "The Content of Perceptual Experience", *Philosophical Quarterly*, vol. 44, no. 175 (1994), pp. 190–205.

3. The Visuality of (All) Metaphors

Analyzing this visual aspect of metaphors, I propose a theory of metaphor that characterizes *visuality* as its essence. Metaphorical structuring, creating or transfiguring, as well as metaphorical conceiving or understanding one thing as another, is *a visual ability*. Metaphorical mechanism is a predication – assigning a predicate to an object – by means of producing nonconventional structures or compositions, namely, by compositional, or even aesthetic, means. The argument here is that this mechanism of innovative predication is intrinsically

Figure 2: Pablo Picasso, Baboon and Young, *1951.*

ontological, because its result is a transfiguration of the thing, subsuming it under an additional category. Consequently, metaphor is a dialectical phenomenon in the following respect: while it disrupts the order of ontological categories, its structure portrays this disruption harmonious, or at least attributes rightness to it. It is established on disorder and rightness of composition at the same time. This very mechanism of metaphor is visual-material, rather than conceptual. It is a mechanism of *syntactic structure, forms and material composition,* which goes along with perception of structures and of compositions.

This definition is aimed to apply to the various kinds of metaphors: to visual and material metaphors such as Picasso's *Head of a Bull* or his *Baboon and Young*, 1951 (Figure 2), Claes Oldenburg's

Figure 3: Claes Oldenburg, Giant Soft Drum Set*, 1969.*

Figure 4: French Fries and Ketchup*,1963.*

Giant Soft Drum Set, 1969 (Figure 3) or his *French Fries and Ketch-up,* 1963 (Figure 4), Alessandro Martorelli's *Frozen Peas* ice cubes mold design, 2014 (Figure 5); to linguistic metaphors, such as the poet Nathan Alterman's "autumn mortally ill, weary/inconsolable autumns" in *The Third Mothers*, 1938, or Max Black's "the chairman ploughed through the discussion"[9]; and conceptual metaphors that are marked by Lakoff and Johnson such as ARGUMENTS ARE WARS, HAPPY IS UP or THEORIES ARE BUILDINGS.

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[9] Max Black, "Metaphor", *Proceedings of the Aristotelian Society*, New Series, vol. 55 (1954), pp. 273–294, this example on p. 274.

Figure 5: Alessandro Martorelli's Frozen Peas *ice cubes mold design, 2014.*

Baboon and Young and *Head of a Bull* combine two components originating in different categories to one entity. Oldenburg's *French Fries and Ketchup* or *Giant Soft Drum Set* do not combine entities, but themes, dimensions, and materials. The car (target) is a baboon's head (source), and it sometimes works symmetrically as well: the head is a car. The fries are enormous and made of vinyl; the drums are cushion. These structures enhance the categories of baboons, of fries, and of drums and cushions, as well as the extensions of the predicates.

Visual metaphors are quite ubiquitous in visual art. Ernst Gombrich claimed already in 1960/63 that all visual art's perception is metaphorical and is founded on the metaphorical-perceptual tendencies of the viewers. Gombrich, who is interestingly not considered a metaphor theoretician, was one of the first to extend the discussion of metaphors to include objects and images, endowing it with an ontological aspect. He claims that metaphor is a projection of a functionality on a thing, which transfigures it into another thing – be it a stick transfigured into a hobby-horse, a snowman, or Edouard Manet's

stains of colour looking like horses.[10] Goodman, whose ontology was explicitly influenced by Gombrich's, elaborated it into an ontological theory of metaphorical-expressive properties, that can be attributed to any kind of phenomenon, conceptual, linguistic or visual. Along these lines, Arthur Danto, whose aesthetic theory is ontological, characterized metaphors, in *The Transfiguration of the Commonplace,* in terms of style that is derived from creative ways of *seeing* the world. Noel Carroll in "Visual Metaphor" conditions visual metaphors upon homospatiality, namely, the existence of disparate elements in the same space, or actually in the same bounded, physical entity. These elements, Carroll claims, bring to mind different categories or concepts, which we combine and activate by mapping part of what we associate with one category onto another, thus "visual metaphors use pictorial or otherwise visual devices that suggest identity in order to encourage metaphorical insight in viewers".[11]

So we see that quite a few theories accepted a classification of special kinds of images and objects as metaphors. However, their tendency is mainly conceptual or cognitive, rather than visual. Namely, they focus on metaphorical meaning, applying definitions of conceptual or linguistic metaphor to the visual one. Carroll, for example, argues that visual metaphors "function in the same way that verbal metaphors do and their point is identified by a viewer in roughly the same way that the point of a verbal metaphor is identified by a reader or a listener".[12] Accordingly he asks if visual metaphors are actually linguistic metaphors dressed in visuality. My answer is that it is the other way around. Verbal metaphor gains its metaphorical trait by its structure and its syntactic density. The answer to Carrol's query is helpful in characterizing the non-linguistic nature of the visual metaphor, paving the way to a general definition of metaphor. Visual met-

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[10] Ernst H. Gombrich, *Meditations on a Hobby Horse and Other Essays On the Theory of Art*, London: Phaidon Press, 1985, p. 10.
[11] Noel Carroll, "Visual Metaphor", in Jaakko Hintika (ed.), *Aspects of Metaphor*, Dordrecht: Kluwer Academic Publishers, 1994, p. 190.
[12] *Ibid*., p. 189.

aphor is a material construction of an image or an object. Tracking back to the terms of "bike" and "bull" will not interpret Picasso's piece. This metaphor is independent of language. It is based solely on the visual features of the saddle and the handlebars transfigured to a bull's head, while partially maintaining their original formal identity. The Visuality of Metaphors argument thus challenges theories that define metaphor as a linguistic or conceptual phenomenon in nature, which is based on its semantic mechanism, broad meaning, and cognitive value. Those theories have been prevalent in the philosophical discussion since the second half of 20th century, under the influence of the philosophy of language, and later of cognitive studies.

My argument goes as far as proposing two more assertions. The first is that while visual metaphors do not originate verbally, verbal metaphors originate visually. These are visual-verbal units (that take on "visual verbality"). The second is that verbal attempts to extract metaphorical conceptuality actually either fail to capture the metaphor or freeze it into literal expression. This applies to all kinds of metaphors, verbal ones included. The issue is not whether metaphor originates in concepts or pictures. The right way to characterize metaphor, initially, is through formalist philosophy that points to structures as essences of phenomena. This argument hopefully has an explanatory power. It helps to explain the aesthetic trait of metaphor, which renders it active, productive and reverberating as long as it is alive.

Defining the visuality of metaphors as their essence, we may accept that *visual metaphors are the paradigmatic ones*, whose mechanism is shared by the various kinds of metaphors. Metaphorical mechanism is based on aptness of form, configuration, syntactic arrangement, or material composition, rather than on understanding one thing through another. Those terms, though not obvious, were chosen to present the qualitative traits of metaphor – namely, its appearance, the metaphorical medium itself – as its foundation. Even a conceptual metaphor is dependent on a structural categorization and on seeing of one concept as a different one, which is enabled by the structural possibilities offered by the visual media. Lakoff and Johnson's conceptual HAPPY IS UP is a composition, a reconstruction of an emotion or

mood enabled by using external physical qualities. The same applies to Altherman's verbal *weary/inconsolable autumns* – it is a transfiguration of autumn. But as what? As… a deeply sad season? concepts and words cannot actually capture it.

The role of the syntax of linguistic metaphors – where the structure of the sentence is essential to the identity of the metaphor – and of visual metaphors is thus even clearer. Accordingly, metaphor is the aesthetic layer of ordinary language – the intersection in which language meets art. Metaphors paradigmatically comprise the relationship between the visual realm and ordinary language, or more specifically between images and texts. The visual metaphor is paradigmatic in a few ways: it shows the ontological aspect of metaphor, namely, of the newly constructed target made by metaphor. It exemplifies the compositional perception of metaphor: it manifests the fact that the perception of metaphor is based on its visuality instead of on conceptual understanding or cognition. The metaphorical mechanism is predicated upon cross-categorical structures, non-conventional compositions. Figurative language itself is dependent on the ability to see those in actuality, or to create them in our mind as *new compositions*. Grasping novel compositions is, in a broad sense, a visual or even aesthetic ability: to perceive not only Pablo Picasso's *Baboon and Young*, but also to picture to ourselves, as well as to create, warm and cold colours, mouth of bottle, or a horse made of a wooden stick, and to conceive – to see – the concepts of a ploughing chairman and theory-buildings.

Revealing the visuality of metaphors might have implications for characterizing cultural progress and intellectuality as aesthetically, rather than conceptually, oriented. Gombrich beautifully explains both the ontology of metaphor and its perception:

> The headlights of a car may look to us like a pair of glowing eyes, and we may call them so. The artist may use this similarity to work his magic of transformation. Picasso did precisely that when he created his wonderful bronze baboon with its young. He took a toy car, perhaps from the nursery of his children, and turned it into a baboon's face. He could see the hood

and windshield of the car as a face, and this fresh act of classification inspired him to put his find to the test. Here, as so often, the artist's discovery of an unexpected use for the car has a twofold effect on us. We follow him not only in seeing a particular car as a baboon's head but learn in the process a new way of articulating the world, a new metaphor…[13]

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[13] Ernst H. Gombrich, *Art and Illusion*, London: Phaidon Press, 1962, p. 89.

VISION, EMOTION, COGNITION

Vicky Karaiskou

Visuality and Emotional Governance in the Public Sphere

1. Setting the Scene

When major national and social issues are at stake, influential public figures engage a combination of linguistic and visual strategies to promote their stances, with a view to communicate clear and concrete messages that will create alignments and consensus among the audience in public sphere. Stereotypical language and reference to familiar concepts that revoke shared memories, experiences and emotions, hold a predominant role among these strategies. Media multiply the effectiveness of shared memories. They selectively choose the most eloquent and dense, in content, arguments or moments of an event and involve image in communicating the concepts at stake.

The day before the Greek referendum on July 5, 2015, left-wing Greek magazine *Χωνί* (*Honi*) published Prime Minister Alexis Tsipras on its cover. Tsipras was depicted in a resistance gesture, identical to the Black Power Salute of John Carlos and Tommie Smith during the medal ceremony in 1968, at Mexico City. The word "OXI" ("No") – the epitome of what is perceived among Greeks as their iconic resistance and free-spirit symbol – in bold red letters underlined beyond doubt the meaning of his gesture: deny the bailout conditions. In September 2015, the TV footage of a baby's dead body from Syria, found on a Turkish coast, ignited fierce reactions and a crisis in the EU. Thirty years ago, in 1989, the Tiananmen Square Protests became a familiar event around the globe due to the iconic image of a man standing in front of a row of tanks. The visual power of the "Falling Man", the photograph of a man falling from the north tower of the World Trade Center on 9/11, turned it into an emblematic image. It is an automatic recall to the events of that day and became material for television shows, source of inspiration for articles,

a documentary (*9/11: The Falling Man*, 2006) and a novel (Don DeLillo, *Falling Man*, 2007).

2. Objective & Departure Point

This chapter has the objective to map, in broad lines, dispositions of memory-mediators (influential public figures) and memory consumers (the public). Point of departure is that language involves verbal and visual modes, and visuals contribute decisively in creating emotional governance and consensus because they are intertwined with emotions. In order to explore that point, the chapter focuses on neuroscience and psychology findings explaining the reasons why social consensus relies more on emotional governance than on reasoning processes among the audience involved. The chapter will engage art theories as well, because both the aforementioned public figures and the media base their impact on a line of selected – hence mediated – concepts and images presented in context in the exact same way arts do: Stage directors narrate only meaningful moments; theater stage directors and designers create interpretations of the texts and environments that underline and promote certain concepts; and visual artists depict only essential scenes of a story, counting on the beholders' knowledge and imagination to complete their narrative. They all aim to instigate perceptions among the audience and to activate maximum affective reaction.

3. Theoretical Frame: Visuals and Emotion

Implicit memory, the memory created unintentionally and without conscious recollection of the process or the event,[1] and the "picture-superiority effect"[2], based on the fact that the nature of memory is

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[1] Daniel L. Schacter, C-Y Peter Chiu, and Kevin N. Ochsner, "Implicit Memory: A Selective Review", *Annual Reviews of Neuroscience* 16 (1993), pp. 159–182.
[2] Mary S. Weldon and Krystal D. Bellinger, "Collective Memory: Collaborative and Individual Processes in Remembering", *Journal of Experimental Psychology:*

visual and emotional,[3] are key particles in the shaping of perceptions, dispositions and, ultimately, behaviours that rally social groups behind beliefs and ideals.[4] For these reasons, they are the focal points in this analysis.

Language is a polysemantic system where visual and verbal modes are inextricably interrelated and co-depended.[5] Foucault[6], indeed, sustains that we are "governed and paralysed by language". Both words, "governed" and "paralysed", are mostly the outcome of implicit memory, which holds a key role in memory making, because it produces explicit knowledge.[7] Implicit memory feels natural and "right", hence plays an important role in visual processing;[8] is durable, and influential to behaviours;[9] and proves to be much more efficient and faster to process complex knowledge structures than explicit, conscious memory.[10]

Implicit memory is directly correlated with visual stimuli and emotion, and the latter is intrinsic to visuals. There are two main consequences of that double correlation: Visuals create faster and

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Learning, Memory, and Cognition, vol. 23, no. 5 (1997), pp. 1160–1175, the quoted passage on p. 1162.

[3] Marvin M. Chun and Yuhong Jiang, "Contextual Cueing: Implicit Learning and Memory of Visual Context Guides Spatial Attention", *Cognitive Psychology* 36 (1998), pp. 28–71; see also Antonio Damasio, *Descartes' Error: Emotion, Reason, and the Human Brain*, New York – London: Vintage, 1994; Robert B. Zajonc, "Feeling and Thinking: Preferences Need No Inferences", *American Psychology*, vol. 35, no. 2 (1980), pp. 151–175; Douglas F. Watt, "Consciousness and Emotion: Review of Jaak Panksepp's 'Affective Neuroscience'", *Journal of Consciousness Studies*, vol. 6, no. 6–7 (1999), pp. 191–200.

[4] Patrick H. Hutton, "The Art of Memory Reconceived: From Rhetoric to Psychoanalysis*", Journal of the History of Ideas*, vol. 48, no. 3 (1987), pp. 371–392.

[5] Wulf Kansteiner, "Finding Meaning in Memory: A Methodological Critique of Collective Memory Studies", *History and Theory* 41 (2002), pp. 179–197.

[6] Michael Foucault, *The Order of Things: An Archaeology of the Human Sciences*, New York: Vintage, 1994, the quoted passage on p. 297.

[7] Chun and Jiang, *op. cit*.

[8] *Ibid*.

[9] *Ibid*.

[10] Pawel Lewicki, Thomas Hill, and Maria Czyzewska, "Nonconscious Acquisition of Information", *American Psychologist*, vol. 47, no. 6 (1992), pp. 796–801.

more efficient memory reactions than verbal modes,[11] and are able to evoke affective reactions more directly and faster than words, too.[12] In addition, according to Heath and Nairn "feelings and emotions have primacy over thoughts"[13]. In his renowned work *The Emotional Brain*, LeDoux proved that emotions are "for the most part, generated unconsciously"[14], meaning that humans are aware only of "the outcome of cognitive or emotional processing"[15]. We are able to detect only the visible part of the iceberg. The fact that emotional responses "can be created even when we have no awareness of the stimulus that causes them"[16] and, mainly, "are more easily influenced when we are not aware that the influence is occurring"[17] renders the "picture-superiority effect" fundamental to emotional governance in the public sphere. Pictures cement stereotypes and make integral part of propaganda. Especially when associated with collective values and goals, they trigger collective sentiments.[18] In addition, since affective reactions can occur with minor perceptual awareness, they are quicker and stronger than cognitive judgments, especially when they involve actual visual reminders.[19]

There are three crucial manifestations of the visual stimuli that partake in the formulation of societal structures, with direct impact on emotional governance in the public sphere: visuality, repetition and visual narratives. Visuality is culturally and socially mediated

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[11] Allan Paivio, "Perceptual Comparisons through the Mind's Eye", *Memory & Cognition*, vol. 3, no. 6 (1975), pp. 635–647; see also Zajonc, *op. cit*.

[12] Zajonc, *op. cit.*

[13] Robert Heath and Agnes Nairn, "Measuring Affective Advertising – Implications of Low Attention Processing on Recall", *Journal of Advertising Research*, vol. 45, no. 2 (2005), pp. 269–281, the quoted passage on p. 269.

[14] Joseph E. LeDoux, *The Emotional Brain: The Mysterious Underpinnings of Emotional Life*, New York: Simon and Schuster, 1996, the quoted passage on p. 17.

[15] *Ibid*., the quoted passage on p. 21.

[16] Heath and Nairn, *op. cit.*, the quoted passage on p. 269.

[17] LeDoux, *op. cit.*, the quoted passage on p. 59.

[18] Émile Durkheim, *The Elementary Forms of Religious Life* (1912), transl. by Karen E. Fields, New York: The Free Press, 1995.

[19] Paivio, *op. cit*.

and defines "how we see; how we are able, allowed, or made to see; and how we see this seeing or the unseen therein"[20]. Memory cannot exist but only within a cultural context[21] because it depends on interpretation, and making sense is a matter of perception and choice of meaning. Repetition of the same visuals makes their concepts feel natural and expected, and builds a sense of safeness.[22] Repetition establishes visuality because it happens in context. It holds an important role in the shifting of attention as well as in visual processing[23] because familiarity (i.e. implicit memory) shapes preferences[24] and that directly affects choices. Social stability or change are, indeed, based on the sameness of choices and on homogeneous arrays of reactions in the public sphere. In addition, this sameness acquires a pivotal role in the persistence of cultural patterns, norms and traditions and in constructing "us"[25]. Vice versa, cultural learnings shape automatic settings in our brains, related to predicted behaviours.[26] Last, but not least, visual narratives, the third manifestation of the visual stimuli, acquire profound significance in shaping perceptions of *realities.*[27] They are considered to be the most powerful mode of communication because "one role of visual context is to allow an incoming image to make contact with stored representations (mem-

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[20] Hal Foster (ed.), *Vision and Visuality*, Seattle, WA: Bay Press, 1988, the quoted passage on p. ix.

[21] Jerome Bruner, "The Narrative Construction of Reality", *Critical Inquiry*, vol. 18, no. 1 (1991), pp. 1–21.

[22] Robert B. Zajonc, "Mere Exposure: A Gateway to the Subliminal", *Current Directions in Psychological Science*, vol. 10, no. 6 (2001), pp. 224–228.

[23] Árni Kristjansson and Gianluca Campana, "Where Perception Meets Memory: A Review of Repetition Priming in Visual Search Tasks", *Attention, Perception & Psychophysics*, vol. 72, no. 1 (2010), pp. 5–18; see also Lisa Maxfield, "Attention and Semantic Priming: A Review of Prime Task Effects", *Consciousness and Cognition* 6 (1997), pp. 204–218.

[24] Patrick H. Hutton, "The Art of Memory Reconceived: From Rhetoric to Psychoanalysis*", Journal of the History of Ideas*, vol. 48, no. 3 (1987), pp. 371–392.

[25] Zajonc, "Mere Exposure".

[26] Joshua Greene, *Moral Tribes: Emotion, Reason, and the Gap between Us and Them*, New York: The Penguin Press, 2013.

[27] Kansteiner, *op. cit*.

ory) of past interactions with identical or similar instances"[28]. For that reason, narrative patterns are "inseparable from social standards"[29].

Repetition of visuals and visual narratives secure the effectiveness of "dominant narrators"[30], due to their direct relation to the "seeing-is-believing" effect.[31] As mentioned above, the repetition of a message turns it into a familiar concept and a natural, unquestionable *reality*. That *reality* tends to dominate mindsets and, eventually, influences behaviours. Research underscores that a member of a group who either dominates a conversation or is perceived as an expert – the dominant narrator – introduces or manipulates memories that cause "social contagion"[32] under the condition that this social group already shares common memories, experiences, values and emotions. This process that promotes a certain version of the shared knowledge and memory as natural is pivotally important in shaping social consensus and cohesion, and in achieving emotional governance, precisely because social groups reflect the dominant narrators' perception of the issues at stake after the exposure to their rhetoric.

4. Theoretical Frame: Visuality in the Arts

Erwin Panofsky, the German art historian and author of the influential *Studies in Iconology*, proves to be very compatible with current

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[28] Chun and Jiang, *op. cit.*, the quoted passage on p. 62.

[29] Kansteiner, *op. cit.*, quoted passage on p. 185.

[30] Alexandru Cuc, Yasuhiro Ozuru, David Manier, and William Hirst, "On the Formation of Collective Memories: The role of a Dominant Narrator", *Memory & Cognition*, vol. 34, no. 4 (2006), pp. 752–762.

[31] Christopher J. Pole (ed.), *Seeing Is Believing? Approaches to Visual Research*, London: Elsevier, 2004; see also Leslie R. M. Hausmann, John M. Levine, and E. Tory Higgins, "Communication and Group Perception: Extending the 'Saying is Believing' Effect", *Group Process Intergroup Relations*, vol. 11, no. 4 (2008), pp. 530–554.

[32] Adam D. Brown, Alin Coman, and William Hirst, "The Role of Narratorship and Expertise in Social Remembering", *Social Psychology*, vol. 40, no. 3 (2009), pp. 119–129, the quoted passage on p. 119; see also Cuc et al., *op. cit.*, the quoted passage on p. 753.

neuroscience theories.[33] Panofsky defined three levels of "reading" an image: the subject-matter level, where the viewer recognizes and names the visual components of a picture; the iconography level, where cultural knowledge and memory intervenes and connects the image to a (familiar) story; and the iconology "reading", where the viewer attributes cultural value to the image and comprehends its importance based on the intrinsic artistic values as well as on the historical, economic and social context.

Although Panofsky focused mostly on the Renaissance, his studies on the mechanisms of making-sense, and on the role of stereotypical visual components and symbols in the pictures had a profound impact in the arts field. However, within the framework of this chapter, his theory of the three levels of image-reading directly associates with the aforementioned issues of memory-workings and visuality. Panofsky's point of departure is that there is always the purpose of meaning behind every depiction, hence the need to communicate a message. This idea resonates equally the functions of all arts, especially those involving visuality, as well as strategies applied by "dominant narrators", whether they are influential public figures or the media: Stereotypical verbal and visual language and selectively promoted narratives or chosen references to familiar concepts aim to the maximal legibility by the public. They all count on the premise that their public is trained to decode visual depictions and is capable to apply that knowledge. In every case, the culturally informed public comprehend the meaning of familiar visuals; perform automatic connotations based on their implicit memory; and emotionally react to symbols.

In painting and sculpture, at least until the era of modernism, artists counted on the pre-existing cultural knowledge of the viewers to recognize the symbols, the protagonists and the narrated events. They counted as well on their imagination to fill-in the missing parts of their narrative.[34] In the same line of thought as Panofsky, art his-

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[33] Erwin Panofsky, *Studies in Iconology*, New York: Oxford University Press, 1939.
[34] *Ibid*.

torians, such as Ernst Gombrich[35] and W. J. T. Mitchell[36], elaborate on the beholders' ability to automatically search for meaning within the context of their culture in order to interpret. They extensively discuss, as well, the attribute of these arts to selectively narrate, to choose eloquent, dense and familiar visual components and, thus, extinguish the redundant "noise" that might render unclear the message.[37] In the exact same way, theater stage designers create environments that imply or induce certain emotional states and reactions, and insinuate the intentions of the text, according to the director's interpretation. Attention on selected moments of the action by the use of lights, sounds, special effects, and eloquent gestures of the actors, or the tones of their voices, is expected. Photography and cinema, during their first period of existence, used composition techniques applied mainly in painting and on the theater stage in order to create a minimum level of familiarity with their audience, and establish communication channels. Photographers capture the most eloquent facial or bodily expressions, or apply techniques of visual synthesis, such as points of view or proportions, to secure the desired interpretation of their image, counting, indeed, on the pre-existing cultural memory and social experience of their viewers. Cinema stage directors stage meaningful moments of a story, and utilize stereotypes and symbols to shift attention and suggest preferences. At the same time, the two new species, when initially introduced to the public, associated their identity with the added value and glare of the academic arts and theater, with a view to foster their own prestige and authority.

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[35] Ernst H. Gombrich, *The Image and the Eye: Further Studies in the Psychology of Pictorial Representation*, Oxford: Phaidon, 1982; see also Ernst H. Gombrich, *Art and Illusion: A Study in the Psychology of Pictorial Representation*, London: Phaidon Press, 1960.

[36] W. J. T. Mitchell, *Iconology: Image, Text, Ideology*, Chicago and London: The University of Chicago Press, 1986; see also W. J. T. Mitchell, *Picture Theory: Essays on Verbal and Visual Representation*, Chicago and London: The University of Chicago Press, 1994.

[37] Gombrich, *The Image and the Eye.*

In the public sphere, the actual three-dimensional space is a constant training arena that teaches its inhabitants through embodiment: Form and content are potent tools and drastically intervene with power and governance because they render the inhabitants' experience – hence their memories and emotions – tangible. How they move through urban structures, how they affectively react to architectural forms and volumes, what they expect to see, and how, by association, they make sense out of the surrounding symbols and aesthetics or the identities of buildings, becomes an on-going practice. It daily adds to and interacts with their existing knowledge, experience and behaviours in their role as individuals and group members. A double correlation exists here: Whether individuals or group members, the inhabitants are viewers and protagonists at the same time as well. In their role as protagonists, they are rather active agents: they position their own body in the three-dimensional public space; they react to correlations, symbols and identities; they affectively respond to aesthetics; and develop perceptions. In short, they react to their environment and make choices. In their role as viewers, they are recipients and consumers: urban structures, such as public and private buildings, roads, and squares with their aesthetics, volume and arrangement in space train their visuality, while that visuality mingles with their existing cultural patterns and defines their personality as protagonists. This constant and multilayer interaction among past knowledge and new stimuli, actual experience and trained mental dispositions, perceptions and tangible certainties co-creates awareness and identities, and verifies the seeing-is-believing effect.

5. Emotional Governance in the Public Sphere

The four examples mentioned in the beginning of this chapter – the *Honí* magazine cover in July 2015, the dead baby and the Tiananmen Square resistance footages, and the "Falling Man" photograph – make only a tiny example of the role visuality holds in everyday emotional governance. In the same way posters and advertisements apply a variety of conventions and promote only parts of a narrative

with the explicit purpose to catch the viewers' attention and persuade them, influential public figures exploit the results of implicit memory and the "picture-superiority effect" with a view to achieve consensus with the desired audience. Media, on their turn, base their influence on the polysemy of the images,[38] their inevitably "conventional and contaminated by language"[39] nature, and the emotions they convey. Public, the memory-consumers, either as individuals and group members, or as viewers and protagonists, react and participate to the – selected and mediated – narrated *realities* regardless of whether these *realities* are actual events, major national and social issues, or narratives of an artwork, a movie, a theater play, or a photograph.

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[38] Mitchell, *Picture Theory*.

[39] Mitchell, *Iconology*, the quoted passage on p. 42.

Pedro Branco

Films that Think and Feel: Lessons from *Forest of Bliss*

1. One

„What is important now is
to recover our senses.
We must learn to *see* more,
to *hear* more, to *feel* more."[1]

Anthropology has long incorporated filmmaking to its repertoire, although the ambiguities that arise from its use have proven to be enduring. Its adoption in what was conceived as a science of words respected an initial purpose of preserving visually rich aspects of cultures, especially ones thought as fated to disappear. But, as the use of film moved away from this documentary purpose – without ever abandoning it – to venture into producing and diffusing academic knowledge, the degree to which it depended on words to convey scholarly meaning became a highly contentious topic. Maurice Bloch iconically affirms a hierarchy according to which words are indispensable: for him, as Lucien Taylor puts it, "textuality itself, and textuality alone (a 'thesis'), is the condition of possibility of a legitimate ('discussive, intellectual') visual anthropology. *Visuality itself becomes merely ancillary, illustrative rather than constitutive of anthropological knowledge.*"[2] Central to this debate is an argument around the inability of deriving unequivocal meaning from pictorial discourse: again in the words of Lucien Taylor, "the indexicality of ethnographic film makes it open-ended, and thus susceptible to differing interpretations in a way anthropological writing is not. … The

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[1] Susan Sontag, *Against Interpretation: And Other Essays*, New York: Picador, 1966, p. 10.
[2] Lucien Taylor, "Iconophobia: How Anthropology Lost It at the Movies", *Transition* 69 (1996), p. 66 (my italics).

various features that make up the whole defy reduction into isolated, unique characters, each with its own singular referent. In this regard, *pictures are dense in a way that texts are not*".[3]

Robert Gardner's *Forest of Bliss* (1986) is a film that clearly embodies this dissention: considered by some an "art film", it is an almost entirely wordless study of Benares, India, relying primarily on images and sounds to convey meaning – with the notable exception of an epigraph by William Butler Yeats. The film is strongly criticized by Alexander Moore, who deems it "deficient" for attempting to convey information only visually, a perceptual mode with intrinsic limitations of its own. His opinion is echoed by Jonathan Parry, for whom the refusal to offer contextualization or commentary testifies to a misleading belief that images can speak for themselves. Moreover, neither the type of intelligibility it lends itself to not its aesthetic qualities would be, in themselves, enough to define the film as anthropological. "No explanation is possible", he writes, "and all we can do is stand and stare."[4] The open-ended character of sense-making in *Forest of Bliss* is also the basis for its acclaim. Enthusiasts affirm that its *silent eloquence* precludes any single interpretation or mode of cognition from taking precedence over any other, pointing toward "an open door beyond which the conventional divisions between document and fiction, sense and the senses, do not exist".[5] Fusing together cognition and the senses, it enables what Mauro Bucci calls a "conceptual response", although his argument maintains that the audience is more immediately engaged by the emotional and sensorial aspects of the film "regardless of his or her narrative or symbolic understanding".[6]

In fact, it is renewed interest in the senses by contemporary anthropology that stands as the epistemological cornerstone for cur-

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[3] *Ibid.*, p. 75 and p. 85.

[4] Jonathan P. Parry, "Comment on Robert Gardner's 'Forest of Bliss'", *Society for Visual Anthropology Newsletter*, vol. 4, issue 2 (1988), p. 7.

[5] Michael Oppitz, "A Day in the City of Death. 'Forest of Bliss' (by Robert Gardner) – A Film Review", *Anthropos* 83 (1988), p. 212.

[6] Mauro Bucci, "*Forest of Bliss*: Sensory Experience and Ethnographic Film", *Visual Ethnography*, vol. 1, no. 1 (2012), p. 14.

rent experimental approaches to ethnographic film. It has allowed filmmakers to operate a shift from the interpretive density of Clifford Geertz's "thick description" towards a phenomenological one, where "the thickness of flesh between the seer and the thing is constitutive for the thing of its visibility and for the seer of his corporeity; it is not an obstacle between them, it is their means of communication".[7] By attending to dimensions of human experience that have nothing to do with verbalism, sensory ethnographic films – thought of as a genre – capitalize exactly on pictorial density, which, in this context, ceases to be regarded as an excess to be contained. They enable forms of engagement that are based less on *exposition* and more on *exposure*, mainly empathy, implication, and sensuous elicitation. In his defense of a "knowledge of being" – opposed to a "knowledge as meaning"– David MacDougall affirms that films offer "a way of knowing that is different from thinking".[8] But is it possible to devise a theoretical framework that moves beyond the senses and towards the realm of thought without capitulating to verbalism? Can films think, as well as feel?

2. Two

> "In this literate age there is an emphasis upon verbalism that I think makes things quite difficult, because it has confounded understanding with explanation and we feel that if we cannot perfectly articulate and explain what we feel, we have not understood it…"[9]

At odds with his indisposition towards poetic ethnographic films, Maurice Bloch maintains that language and language-like norms are not an essential feature of conceptual thought: much of human

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[7] Maurice Merleau-Ponty, *The Visible and the Invisible*, Evanston, IL: Northwestern University Press, 1968, p. 135.

[8] David MacDougall, *The Corporeal Image: Film, Ethnography, and the Senses*, Princeton, NJ: University Press, 2006, p. 7.

[9] Maya Deren, "New Directions in Film Art", in Bruce Rice McPherson (ed.), *Essential Deren: Collected Writings on Film*, Kingston, NY: McPherson & Company, 2005, p. 212.

knowledge is constituted non-linguistically through engagement with the world, and is partly transformed if transported into the verbal domain. While some concepts may take the form of a sequential chain of propositions, others bundle together a plethora of materials in a mobile constellation of partly concrete and partly abstract connections. For the author, "classificatory concepts" "are formed through reference back to rather vague and provisional 'prototypes' which anchor loosely-formed 'families' of specific instances"[10]. Rather than operating under the same logic of a checklist or encyclopaedia entry with well-marked contours, they emerge from an appraisal of their referents in the physical world – also known as "best exemplars" – and an assessment of their composition, making up provisional "scripts" by means of which distinct phenomena are understood. Categories like these exist independently from language, comprising malleable pattern networks of "chunked knowledge" that defy reduction into sentence-logic models. Thus, although they generally lend themselves to some degree of verbal description, this method proves inadequate to accurately convey their organizational logic. In these cases, Bloch encourages anthropologists to "make much more use of description of the way things look, sound, feel, smell, taste and so on – drawing on the realm of bodily experience".[11]

What *Forest of Bliss* does, through a vast range of cinematic elements, is provide viewers with the concrete substance and indicate connections out of which complex concepts and ideas of this type can be constructed, or by way of which prior prototypes can be destabilized and enlarged. By watching the film, the audience confronts a world designed to bring into view a number of semi-abstract insights which cannot completely forgo the extremely granular materialities that prompted them. The viewer is actively implicated in a heuristic process of combining, organizing, classifying, and deriving from the highly heterogeneous array of – external and internal – elements that comprise cinematic experience to weave loose networks of signi-

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[10] Maurice Bloch, "Language, Anthropology and Cognitive Science", *Man*, vol. 26, no. 2 (1991). p. 185
[11] *Ibid*., p. 193.

fication and, with them, arrive at novel abstract-concrete categories, or supplement and rearrange previously existing ones to accommodate new input. Thus, barren explanatory categories such as "cyclicity", "decay", and "transcendence" are significantly broadened and elaborated upon as the viewer deploys them as analytical operators and ascribes tangible and embodied meaning to them. Kindred notions may be conceived – not necessarily verbally – to gauge more elusive realizations. Thus, the means by which sense-making is realized in *Forest of Bliss* is by tentatively "scripting" concepts and ideas that the encounter with the film brings forth. Their complexity hardly resists being flattened out by the hollow vocabulary of conventional language.

The particular insights that *Forest of Bliss* aims at conveying are fundamentally non-linguistic, and the film's images and sounds – along with the subjective parts supplied by the viewer – are the stuff that composes them. Meaning must be experienced – not inferred – within the aesthetic paradigm of the film as a whole. Its form is, therefore, not a detachable component of its content, constituting both the matter and the analytic lens that makes understanding possible. In fact, Ákos Östör asserts, in his response to Jonathan Parry, that "the esthetics of this film are a part of the visual (and anthropological) interpretation without which there would be no film at all. … The film constructs its meaning through these devices."[12] These incite, evoke, produce, and provoke thought in the audience by virtue of their continued engagement with the film, where sensing "acts as a constantly available channel that productively couples agent and environment rather than as a kind of 'veil of transduction' whereby world-originating signals must be converted into a persisting inner model of the external scene".[13] Instead of expecting images to speak for themselves, the viewer must integrate a composite circuit with

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[12] Ákos Östör, "Is That What Forest of Bliss Is All About? A Response", *Society for Visual Anthropology Newsletter*, vol. 5, issue 1 (1989), p. 5. The devices Östör lists are: form, composition, light, camera angle, pace, flow, structure, editing, montage.
[13] Andy Clark, *Supersizing the Mind: Embodiment, Action, and Cognitive Extension*, Oxford: Oxford University Press, 2008, p. 15.

Forest of Bliss, in which both think together. The moment this circuit is interrupted – i.e. when the viewer effectively "throws away" the film from his or her thought process – is when thinking *with* the film gives way to thinking *about* it.

Ultimately, *Forest of Bliss* engages the viewer both physically and intellectually in the processes of ascribing meaning to things beyond the socially-shared categories of language. The immediate readiness of understanding that characterizes verbal communication levels complexities down to common denominators in the process of encoding them in purely abstract formulations. Moreover, language is incapable of registering sensorial and embodied information. The film restores these dimensions of understanding, structurally unavailable in language, to the cognitive process of the viewer, qualitatively altering the means of engaging the world that unfolds before them. Instead of boxing the world in the confines of sentential linguistic conceptualization, *Forest of Bliss* enforces upon cognition the polysemic mandate of materiality, which, by its own token, defies and resists reduction into pure abstraction.

3. Three

> "Une autre idée du cinéma est possible,
> celle où les oeuvres ne nous divertissent pas,
> mais nous diversifient.
> Un cinéma où les sons et les images
> ne sont pas les véhicules,
> mais le point de suture de la pensée."[14]

Some key implications of restoring thought and cognition to a sensory approach to film should be derived from this very brief discussion. The driving ambition shifts from providing a sensorial window into a given reality to mobilizing the cinematic experience to assist thought to unfold. The endeavour of bringing into fruition a mental process in which film and viewer are mutually implicated and which attends to the goal of conceiving and remodelling conceptual

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[14] Mouloud Boukala, *Le Dispositif Cinématographique: Un Processus pour [Re]-Penser l'Anthropologie*, Paris: Téraèdre, 2009, pp. 34–35.

"scripts" demands filmmakers to place greater emphasis on suggesting connective pathways between heterogeneous cinematic elements, especially through camerawork and montage techniques. Moreover, because film is regarded as a process – rather than a product – it is never fully realized except in reception, and, therefore, requires built-in strategies to encourage active modes of viewership. Finally, the proposed shift from *how things feel* to *how thought may be transformed by how things feel* imbues filmmaking with a fundamentally imaginative – rather than documentary – orientation.

Within this project, the development of unorthodox filmmaking practices that efface the boundary between form and content become imperative. Maya Deren proclaims experience to be the single possible avenue of education. "When a person comes in, experiences something, and goes away a bit different, he has been educated. Art", she concludes, "is the only educational medium."[15] Anthropology and its films must embrace art to fulfill their educational vocation. They must take on the challenge of putting forward experiences that invoke the ineffable world of thought. To enable this, rhetorical strategies specific to the cinematic medium ought to be systematically studied beyond a purely sensorial paradigm in order to assess their appropriateness to anthropological discourse. It is through the effort of reapproaching *sense* and *the senses* that films – moving away from simply reproducing reality – can unsettle what would have otherwise been taken for granted and, therefore, live up to the promise of reconfiguring the ways in which we understand and engage with the world.

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[15] Deren, *op. cit.*, p. 219.

Szilvia Finta

Language of the Heart
The Role of Pictures in the Hebrew Scriptures
and in Rabbinic Reasoning

1. Introduction

The aim of my paper is to answer the question: "Why is it so impor-
tant for man to be addressed by pictures, and how can images make
people perform certain acts?" – discussed from the aspect of the phi-
losophy of the Hebrew Scriptures.[1] To answer this question, first, I
will give an outline of Biblical anthropology. Then I would like to
speak about the types of images in the Hebrew Scriptures. In the third
part of my paper I will demonstrate the role of pictures in the Rab-
binic argumentation and analyze their features. Finally, I will propose
a view on a specific method by which we can find out the meaning of
a picture and answer the abovementioned questions.

2. An Outline of Biblical Anthropology

From the 17th century on there is a passionate interest in the mind-
body problem in philosophy. In the ancient philosophical tradition,
the soul – in modern terminology: the mind – is not something
material but something spiritual, which keeps man alive. Since the
1930s a number of philosophers – representatives of physicalism –
maintain the one could say simplistic view that a human being is
completely physical. It is only the substance dualists who claim that
man is both physical and spiritual. Thus, although physicalism gives

an explanation of how mental causation works – it maintains that mental properties (e.g. being in pain, feeling sad, etc.) are also physical properties – it seems it can not settle many other issues, such as the problem of phenomenal consciousness, intentionality, self-consciousness, subjective feelings, free will, etc.[2]

In contrast with what physicalism, dualism and the ancient philosophical tradition claims, the Bible maintains that man has three main parts: spirit (Hebrew: *neshama, ruach,* in Greek: *pneuma*), soul (Heb.: *nefesh,* Gr.: *psyche*) and body (Heb.: *basar,* Gr.: *sarx, soma*).[3] According to this trichotomic view, a human being is primarily a spiritual being, who has a soul and lives in body.[4]

According to Genesis 2:7, God created man from the dust of the ground, then He blew the spirit of life *(nishmat chayyim)* into his nostrils and after that he became a living soul *(nefesh chaya)*. Thus, according to the Story of Creation the soul came into being when the spirit met the body, therefore the soul has a dual nature.

In other parts of the Torah we can see that the blood is soul or a part of the soul: "But be sure you do not eat the blood, because the blood is the life [*nefesh* = soul] and you must not eat the life [*nefesh* = soul] with the meat [*basar* = body]."[5] The Hebrew *nefesh* basically means "soul". Moses says that the blood is the soul which gives life to man, and we know from Genesis that the soul is in connection not only with the physical world – which here means the blood – but with the spiritual world – with the spirit – too. Thus, according to the Bible, the dual nature of the soul is the solution for the causal interaction between the spiritual and the physical entities of man. In addition to the abovementioned three parts of man, the Hebrew Scriptures

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[2] Find more on this view of the mind-body problem e.g. in J. P. Moreland and William Lane Craig, *Philosophical Foundations for a Christian Worldview*, Downers Grove, IL: IVP Academic, 2003, pp. 228–266.

[3] E.g.: 1Thess 5:23, etc.

[4] See e.g. Kevin J. Conner, *Foundations of Christian Doctrine*, Chichester: Sovereign World Ltd., 1988, pp. 124–129. The trichotomic view was banned in the Western Church, primarily for political reasons, by the Fourth Council of Constantinople in 869/70.

[5] Dt 12:23, cf. Lev 17:11, *The Holy Bible*, New International Version, 1984.

maintain: "Above all else, guard your heart, for it is the wellspring of life." (Prov 4:23). What is the heart if you compare it with the spirit, the soul and the body?

According to the Hebrew Scriptures the heart *(lev)* is the center and the innermost being of a man, the fundament of a personality, in which the spirit, the soul and the body join each other, and which makes man alive. When the *lev* is thinking in the Hebrew Scriptures, the Septuagint usually renders it with the Greek word: *nous*.[6] *Nous* is a type of sense in the New Testament and is related to the spirit (*pneuma* – Eph 4:23). Thus, *nous* is the sense of heart, the innermost and intuitive thinking ability of a man, which is distinguished from pure analytic thinking. The sense of heart is a spiritual perception, which grabs its object and the essence of things suddenly and directly by intuition, that comes to man many times by visions, (mental) images, imaginations and dynamic pictures. The picture is a compression of information, as it can say much more than a word or a sentence. It is able to impact somebody's emotions, intelligence and will at the same time and it can change somebody's heart – and so his deeds, life and destiny which comes from it – in a minute. Therefore, one can assume, this is the reason why God often speaks to man through pictures.

3. Main Types of Images in the Holy Scripture

When we begin to read the Holy Scripture, we notice that it speaks in many types of images. We will review the major types below.

3.1. Symbols

In the Hebrew Scriptures we find that God speaks about the supernatural, Heaven, Heavenly things and about the nature and the condition of man through a 3D model. This model is first the Holy Tabernacle (Ex 25–30), then the Temple. It was to be made after the pat-

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[6] E.g. Is 10:7.

tern which had been shown to Moses.[7] The sacred objects, their hand-lings, materials, colours and numbers are all symbols and convey messages to us about the transcendent world and the inner structure of man, cf. Figures 1–3. Even the sacrifices offered in the Tabernacle and the Temple have transcendental meaning.[8]
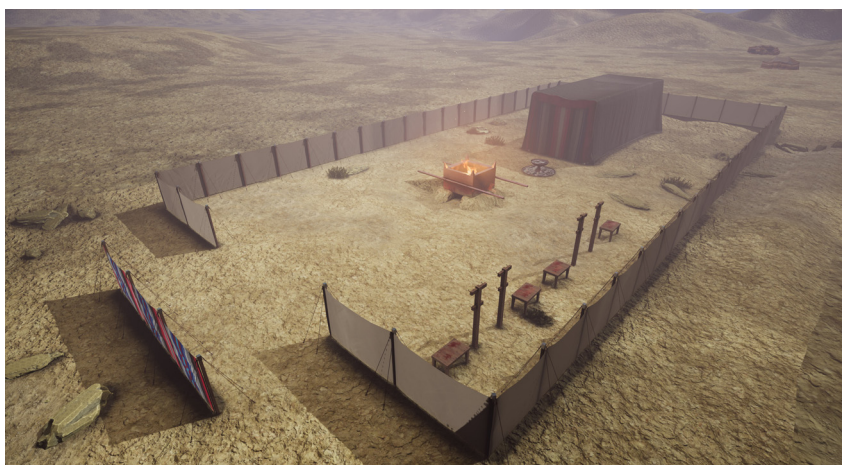
Figure 1: The Holy Tabernacle.
The three parts of the Tabernacle and its objects symbolize the three main parts of man and its functions. The Outer Court symbolizes the body, the Holy Place represents the soul and the Holy of Holies symbolizes the spirit.
Image source: Bezalel Studio – Tabernacle VR Project (tabernaclevr.com).

Furthermore, there are symbolic meanings of all the animals and plants in the Bible. For example, the almond is the symbol of quick fulfillment of God's word (Jer 1:11–12); the ant is a symbol of wisdom (Prov 6:4–5). The symbolic meaning of these beings is rooted in their natural attributes and their usage in the Biblical context, cf. Figures 4 and 5.

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[7] Ex 25:40, cf. Heb 8:5, 9:23.

[8] See from a Jewish aspect e.g. Rabbi Shalom Dov Steinberg, *The Mishkan and the Holy Garments*, Jerusalem: Toras Chaim Institute, 5752, from a Christian aspect e.g. Derek Prince, *The Way into the Holiest*, Study Note Outline, Derek Prince Ministries, 1973.
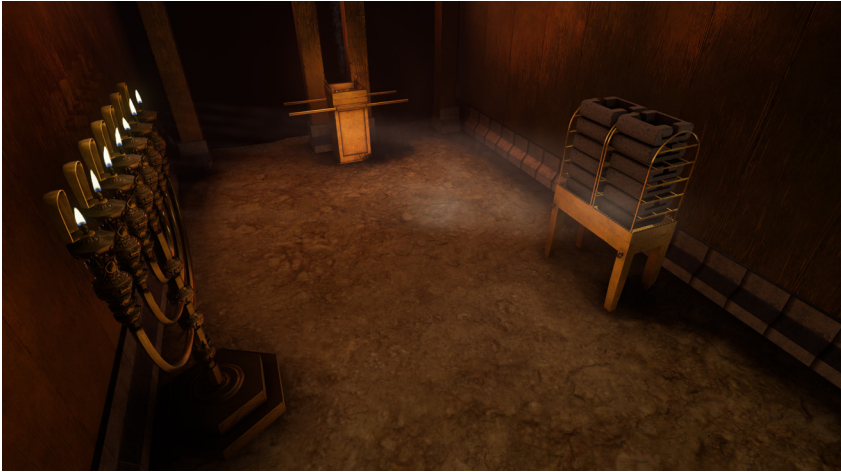
Figure 2: The Holy Place.
The Holy Place had the Table of Showbread, the Golden Lampstand (Menorah)
and the Golden Altar inside. According to Bible scholar Derek Prince, they
symbolize the three main parts of the soul: the will, the intellect and the emotions.
Image source: Bezalel Studio – Tabernacle VR Project (tabernaclevr.com).

Figure 3: The Ark.
The Ark was placed in the innermost part of the Holy Tabernacle, the Holy of
Holies. God revealed himself to the High Priest here. The Ark symbolizes the
heart, the innermost part of man.
Image source: Bezalel Studio – Tabernacle VR Project (tabernaclevr.com).

Figure 4: Almond tree.
The almond tree is the first among the trees to blossom in spring. It is the symbol of the fulfillment of God's Word.
"The word of the Lord came to me saying: 'What do you see, Jeremiah?' 'I see a rod of an almond tree', I replied. The Lord said to me, 'You have seen correctly, for I am watching to see that my word is fulfilled.'" (Jeremiah 1:11–12)
Image source: https://www.learnaboutnature.com/plants/trees/almond-tree.

Figure 5: Ant – the symbol of diligent work and one type of wisdom.
"Go to the ant, you sluggard; consider its ways and be wise! It has no commander, no overseer or ruler, yet it stores its provisions in summer and gathers its food at harvest." (Proverbs 6:6–8)
Image source: https://hu.pinterest.com/pin/644437027900357843.

3.2. Dreams

Many times, God speaks to the rulers by dreams. For example, He spoke to the Pharaoh of Egypt about the seven years of famine after seven years of prosperity through two pictures (Gen 41:1–39), cf. Figures 6 and 7. He also shows pictures of the forthcoming history, as we can see in the Book of Daniel (Dn 2). God revealed the script

Figures 6 and 7: The Dream of the Pharaoh.
God revealed the seven years of famine after seven years of prosperity to the Pharaoh of Egypt by two pictures: the picture of seven thin and scorched ears of corn which swallowed up seven healthy and full ears of corn; and by the picture of seven lean and ugly cows which ate up seven fat and sleek cows.
Image source: http://www.freebibleimages.org/illustrations/joseph-pharaoh-dreams.

for history of the next thousands of years to Nebuchadnezzar in a dream. The dream was interpreted by Daniel. The Golden Head symbolizes Nebuchadnezzar's Kingdom, the silver breast and arms are the Medes and Persians, the bronze belly and tights represent the Greco-Macedonian Empire of Alexander the Great, the iron legs symbolize the Roman Empire and the iron and clay feet and toes represent a brittle and unstable mixture of the final phase of the Roman Empire – according to some Bible scholars, modern Europe – which will be made up of ten kings, some strong and some weak. The stone, which destroys all the empires of the word, represents the forthcoming kingdom of God.

3.3. Visions

Visions frequently occur in the Hebrew Scriptures. God displays visions and images to the prophets and He himself interprets them, usually with a future aspect (e.g. Am 7:7–9).

3.4. Performances

Sometimes the prophets of the Almighty have to deliver performances. In these cases it is not only the pictures that have meanings, but the sounds and the odour, too. The performances are carried out through the prophets' body and give some insight into the future (e.g. Ez 4:1–17).

3.5. Illustrations

God often commands the prophets to convey His message by palpable illustrations. For example, Jeremiah had to buy a clay jar from a potter and then break it, through which he prophesized about the horrible future of Judah and Jerusalem (Jer 19:1–13).

3.6. Commandments

There is another type of picture usage in the Hebrew Scriptures, in the texts of commandments. When we read particular instructions in the Books of Moses, we can observe that God very often gives orders by precedents, which frequently are conveyed by pictures. For instance, God commands: "Do not take a pair of millstones – not even the upper one – as security for a debt, because that would be taking a man's livelihood as security" (Dt 24:6). We have to be aware what "mill" and "upper millstone" mean in this context and what other objects there are in this law that will be basis for further instructions. God expects us to perform particular and right deeds along the interpretation of the commandments, which in fact were given in pictures, cf. Figure 8.

Figure 8: Millstones.
Image source: https://wol.jw.org/en/wol/d/r1/lp-e/1001072061.

3.7. Proverbs

The next form of ethical teachings is the proverb. Proverbs are pithy sayings, which frequently are expressed by prosaic pictures. E.g.: "Like one who takes away a garment on a cold day, or like vinegar poured on soda, is one who sings songs to a heavy heart" (Prov 25:20).

3.8. Stories

The next major type of pictures in the Bible are the stories. There are many types of stories: stories taken from real life,[9] parables (e.g. 2Sa 12:1–7), allegories (e.g. Is 5:1–7) and fables (e.g. Jdg 9:8 –16). These stories are similar to films,[10] they have ethical meanings and teach us something about the nature of God, men, the law and right and wrong deeds, cf. Figure 9.

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[9] E.g. the lifestory of Joseph, Ruth, David, etc.

[10] For the structure of parables see Brad H. Young, *The Parables: Jewish Tradition and Christian Interpretation*, Peabody, MA: Hendrickson Publishers, 1998, pp. 24–26.

Figure 9: Rembrandt: The Return of the Prodigal Son.
The parables often reveal the nature of God. In the story of the prodigal son, the
father represents God as Father.

3.9. Typologies

Typology uses well-known places, historical persons and events as instances of forthcoming events and figures. For example, David is an archetype of the Messiah while the reign of Solomon is an archetype of the Messianic era.

We have looked through the principal methods through which God spoke to people in images in the Hebrew Bible: (1) He wants to give us insight into the supernatural world and (2) into the future; and (3) He gives us commandments and (4) ethical instructions. He speaks to us about the most important things by concrete objects, events and persons, and not by abstract concepts. This is why teaching by pictures became the most important teaching method in Ancient Judaism.

4. The Role of (Mental) Images
in Rabbinic Argumentation

One of the most important methods of the interpretation of the Holy Scripture in the Rabbinic Exegesis is the *mashal*. The word *mashal* means *parable*, *comparison*, *image*, *proverb*, *wise saying*[11] and comes from the verb *mashal*, which means *to do the same*, *to compare* and *to reign*, *to rule over something*, *to have domination over something*.[12] Based on these meanings, many scholars say that *mashal* is a teaching method by which the speaker catches the listeners' attention by images, has domination over their heart, compels them to make a decision and force them to act accordingly.[13] So *mashal* approaches not only the mind, but the emotions and the whole heart too, that is, the whole being of the listener. The listener does not forget it easily, because it is not an abstract and cold teaching, but a source of delight to the listener.[14] According to the rabbis, we can get to know God and keep his commandments with the help of *mashal*.[15] However, what do the rabbis use *mashal* for?

    1. To show us the nature of God (God appears as a king /Mt 22:2–14/, as a farmer /Is 5:1–7/, as a master /Mt 25:

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[11] *Gesenius' Hebrew and Chaldee Lexicon to the Old Testament Scriptures*, Grand Rapids, MI: Baker Book House, 1993.

[12] Ernest Klein, *A Comprehensive Etymological Dictionary of the Hebrew Language for Readers of English*, Carta, Jerusalem: University of Haifa, 1987.

[13] As a matter of fact, *mashal* is everything which was mentioned in section 3 above. See *Encyclopaedia Judaica*, Jerusalem: Keter Press, 1996, "Aggadah"; *The Jewish Encyclopedia*, New York: Funk and Wagnalls, 1906–1910. Online version: www.jewishencyclopedia.com, "Parable".

[14] Kohelet Rabbah 2:8. The technique of *mashal* is still valid. In their book Chip and Dan Heath describe the major ways of how ideas and information stick in people's minds. The six secrets of "stickiness": Be simple, unexpected, concrete, credible, emotional and use stories. I believe this is very similar to the features of *mashal*. See Chip Heath – Dan Heath, *Made to Stick: Why Some Ideas Survive and Others Die*, New York: Random House, 2007.

[15] Sifre Deuteronomium 49.

14–30/, as a father /Lk 15:11–32/ and so on in the parables
and we get to know God by these functions).[16]
2. To give us ethical messages. (E.g.: what a faithful and
wise servant of God is like /Mt 24:42–51/, or how man
has to behave towards his fellows /Mt 18:23–35/, etc.)
3. To give the definition of abstract concepts. (E.g.: what
real Shabbat is like /Is 58/, or what the word "fellow-man"
means /Lk 10:27–37/, etc.)
4. To make us interested in acting out God's command-
ments. (E.g.: *mashal* teaches about the rewards of keeping
the Shabbath /bShabb 11a/, etc.)
5. To teach us about the nature or condition of man. (E.g.:
by fables /Jud 9:8 –15/.)
6. To teach us about the supernatural world and metaphys-
ics /Ps 78:2/.

And now here comes the vital question: how can we understand the
meaning of images?

5. The Meaning of Pictures

I side with the view that the meaning of pictures depends on their
context. They have propositional content. In the case of pictures, the
literal content and the metaphorical content differ from each other.
You have to be aware of the exact situation in which the pictures are
used, to be able to understand their intended meaning.[17]
       As I see it we can derive the intended meaning of pictures by
abduction.[18] Abduction is an inference for the best explanation: you
have to set up an explanatory hypothesis besides the available facts.

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[16] Being a Jewish rabbi, Jesus, too, frequently spoke to people by *mashal*s.
[17] Søren Kjørup, "Pictorial Speech Acts", *Erkenntnis* 12 (1978), pp. 55–71, see
esp. p. 57.
[18] Cf. Sandra Moriarty, "Visual Semiotics Theory", in Kenneth Smith – Sandra
Moriarty – Gretchen Barbatsis – Keith Kenney (eds), *Handbook of Visual Com-
munication: Theory, Methods and Media*, Mahwah, NJ: Lawrence Erlbaum As-
sociates, 2005, pp. 227–242, see esp. pp. 235–236.

Only this type of reasoning provides you with new knowledge.[19] The best hypothesis or explanation is the one that is the most simple and the most natural, the one that can be verified the easiest and which helps you understand the facts. Searching for the best explanation of facts begins with emotions: you are astonished at something.[20] Emotions prompt you to meditate and the mind examines thoroughly the probable hypotheses. According to Charles Sanders Peirce, abduction is "an act of insight" which is coming to us "like a flash"[21] that you then have to confirm by deduction. According to Paul Thagard, emotions have a function at the end of the abduction too: you are pleased and satisfied with the right conclusion.[22]

Aristotle claims you can get to know a new phenomenon only if you think with the *nous* (sense of the heart) and not by logic.[23] According to Aristotle, the *nous* works by intuition and this is how real knowledge begins, which leads you to the truth. To sum it up, you can grab the substance of things only by your sense of heart.

6. Conclusion

The aim of my paper was to answer the question: Why is it so important for man to be addressed by pictures, and how can images make people perform certain acts? According to the reconstruction of the Hebrew Scriptures here offered, the main thinking organ of man is the heart. If you want to get to know true reality, you must think

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[19] *"All that makes knowledge applicable comes to us via abduction (Ms. 692.)"* Quoted by Thomas A. Sebeok – Jean Umiker-Sebeok, *"You Know My Method": A Juxtaposition of Charles S. Peirce and Sherlock Holmes*, see http://www.visual-memory.co.uk/b_resources/abduction.html.

[20] Paul Thagard, "Abductive Inference from Philosophical Analysis to Neural Mechanisms", in A. Feeney and E. Heit (eds.), *Inductive Reasoning: Cognitive Mathematical and Neuroscientific Approaches*, Cambridge: Cambridge University Press, 2005, compare: http://cogsci.uwaterloo.ca/Articles/abductive.final.pdf, Oct. 31, 2005, p. 3.

[21] Peirce 5.181, quoted by Sebeok.

[22] Thagard, online paper, p. 4.

[23] Aristotle, *Second Analytics* II, 19, 100b 3−17.

with your heart, your innermost being, the true yourself, in which your deepest emotions, your intelligence and your will collaborate with each other.

This reconstruction implies that the language of the heart is the image, the vision. According to Immanuel Kant, understanding transcendent concepts is extremely difficult because they contain paradoxes, and the mind, logical thinking, cannot apprehend them in their wholeness.[24] You can only grasp for meanings, and in this process, pictures help much more than words. Recall that Wittgenstein warned us not to be satisfied merely with the statement that words are undefinable;[25] the meaning is the use itself.[26] I suggest that the only way to be able to come to terms with concepts is through everyday events, pictures, images and visions.

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[24] Immanuel Kant, *Critique of Pure Reason*, transl. Paul Guyer and Allen W. Wood, Cambridge: Cambridge University Press, 1998, B XX–XXX.

[25] Ludwig Wittgenstein, *Philosophical Investigations*, transl. G. E. M. Anscombe, Oxford: Basil Blackwell, 1953, Part I, § 182.

[26] *Ibid*., § 43: "the meaning of a word is its use in the language", cf. also § 42.

Edna Barromi-Perlman

Analysis of Photographs
of Kibbutz Youth Hikes in Israel

1. Introduction

Photographs of kibbutz youth hiking in the desert in Israel or climbing a cliff in regiment, are connected to myths of adventurous heroic hikes. The photographs served as visual constructions that created an ideal image of hikes, based on Zionist values of redemption of the land. The photographs presented each hiker as part of a heroic uniform group; the hikers all wore traditional kibbutz khaki clothes and boots and carried back packs, all of which went in line with the process of education and implementation of Socialist Zionism, which was presented at its peak in these images. The reading of the images by kibbutz members and the Israeli public was consensual. The public – the viewers on kibbutzim and in the rest of Israeli society – for decades, considered these youth as the epitome of kibbutz socialism and Israeli Zionism. Viewing the photographs enabled them to participate in image making that supported Zionist goals of conquering and redeeming the land. The photographs of youths marching in line, in the desert, contain rich layers of meanings regarding notions of bravery, kibbutz values, and of a style of life that evolved in this era.

The most famous photographs of kibbutz youth hikes were taken by a member of Kibbutz *Bet Ha'shita*, Azaria Alon (1918–2014).[1] The study presents samples of his photographs of monumental hikes, in which youths are seen climbing up desert cliffs, that be-

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[1] Azaria Alon, *Photographs: Desert – Kibbutz – Nature, 1940–1990* (Tazlumim-Midbar-Kibbutz-Teva), Ein Harod: Ein Harod Art Gallery, 2011 [Hebrew]. Alon was awarded the Israel prize in 2012 for his lifelong achievement in the field of travel and nature travel. In 1998, Alon was declared one of the 500 most influential people in the world in the field of environment. He was awarded honorary doctorates by the Weitzman Institute and Bar-Ilan University.

came symbols of mythological hikes of his kibbutz movement. Alon functioned as teacher, mentor, tour guide, and photographer. As an educator on his kibbutz, *Beit Ha'shita*, he transformed the hike into a pedagogy for youth and for professional guides.[2] His pupils, boys and girls, were in 10th, 11th, and 12th grades and they all participated in the strenuous hikes he directed. In his photographic albums, the hikers appear energetic and youthful. Alon's images of youth hiking in line, photographed from a distance, appearing as shadows or dark spots merging into the desert landscapes, gained iconic features in Israeli culture. Alon's archive is owned by his daughter, Avital Efrat, who has given me permission to use the photographs. Her narratives and perspectives on youth hikes have contributed to the study.

During the time frame of the study, between 1939 and 1959, travel was on foot, the paths were unmarked, the terrain was hostile, and there was constant threat of attacks by local Arabs. Nature in these images is presented as desolate, the hikers trod on barren land, as if waiting for redemption by the kibbutz youth. Youth movements, most of which were youth movements of the kibbutzim, took an active part in this endeavour. The form of hikes of kibbutz youth that evolved carried the characteristic of military hikes. The youth carried their packs on their backs and, when and if possible, included ammunition. The aim was to "conquer" and "redeem" the land by walking on it, which was a very strong component of Zionist ideology. The hikes carried traits of heroism and bravery; the hikers themselves were perceived to be courageous, hiking was perceived as a means for forging connections with the land and the country. The photographs of these youth hikes developed into a generic form of representation, in which the power of the masses and the forces of nature serve as recurrent themes.

Historically, kibbutz society generated its own original visual material with the intention of promoting kibbutz ideology and visions of utopia, a visual language intended to serve as symbolic visual presentation of its actions and goals, that was aimed at being consistent

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[2] The youth movement of Kibbutz *Beit Ha'Shita* was the Socialist, Zionist movement called *Ha'Ma'ha'not Ha'o'lim* (the Rising Campers), founded in 1926.

with kibbutz ideology.[3] Kibbutz society was based on the ideological unity of its members, who shared common beliefs and believed that they should and can affect the rest of Israeli society.[4] The images of kibbutz youth were perceived as a reflection of their utopian existence on kibbutz. The reading of the images was consensual in the sense that the members were joined by a vision which enabled them to endorse the same decoding system for signs and symbols that existed in kibbutz photographs.[5] Thus, image construction and production in kibbutz society was meant to support society's ideological structure; the intentionality of the visual images was to promote the ideology and visions of utopia. All this reflected directly on the reading of the photographs of youth hikes.[6]

The study of the selected photographs by Alon is based on an interpretive, inductive approach. It aims at understanding how and why things happened, which is contingent on the interpretation of meanings, of values, and ideologies. Understanding is also contingent on the process of viewing the photographs. The audience, the viewers, create meaning for the signs in the photograph, in relation to the culture in which they were created and the time in which they were viewed. Creswell explains: "Often these subjective meanings are negotiated socially and historically. They are … formed through interaction with others … and through historical and cultural norms that operate individuals' lives."[7] It is important to understand the contextual background of the Israeli viewers, in order to generate meaning for the images.

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[3] Edna Barromi-Perlman, "Practices of Photography on Kibbutz: Case Study of Eliezer Sklarz", *Journal of Israeli History*, vol. 34, no. 2 (2015), pp. 1–23.
[4] Henry Near, "Paths to utopia: The kibbutz as a movement for social change", *Jewish Social Studies* 48.3/4 (1986), pp. 189-206.
[5] Barromi-Perlman, "Practices of Photography on Kibbutz".
[6] *Ibid.*
[7] John W. Creswell, *Research design: Qualitative, quantitative and mixed method approaches*, London: Sage Publications, 2003, p. 8

2. From Travel Restrictions to Austerity

Youth hikes developed as a need and response of the Jewish population in Palestine under the rule of the British Mandate. From the outbreak of WW 2, in 1939, until the end of the British Mandate for Palestine in 1948, travelling and hiking were forbidden for Jews in Palestine. The restriction enabled the Jews to travel to work only with special permits. Travelers caught by the British army were arrested and imprisoned. Thus, travelling before 1948 was transformed into an active response and an act of bravery, in which military attire and regime, enforced during the hikes, were par for the course. The period of the study relates to 1939 until 1959. From 1949 (a year after the founding of the state of Israel) until 1959 Israeli society was going through a financial recession. Austerity regulations were reinforced, consumerism was limited, which affected the practices of photography. During this time, kibbutz ideology became consolidated and kibbutz life was strict. Kibbutz life style evolved from Marxist-communist ideas, essentially a commune structured on the basis of a socialist ideology. Material goods on kibbutzim were limited. Photography according to kibbutz ideology was considered a bourgeois symbol, cameras were perceived as materialistic items, and ownership of private cameras was discouraged. Beyond that, the rest of Israeli society during the 1950s was in the throes of a recession; the standard of living in Israel was significantly impoverished in contrast to today. Food and clothing were rationed until 1959. Most kibbutzim had one photographer who owned a camera and documented all kibbutz life.[8] The vision of kibbutz life, the everyday life and activities, and youth hikes were normally documented through the lens and eye of the kibbutz photographer.[9] In kibbutz *Beit Ha'shita* it was Alon who documented the hikes. In the late 1960s, after the Six-Day War, the economy began to flourish in Israel.[10] As Reich writes:

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[8] Barromi-Perlman, "Practices of Photography on Kibbutz".

[9] *Ibid.*

[10] Sever Plotzker, "The Israeli Economy from 1967–2007: 'From Blossoming Socialism to Successful Capitalism' ", economic supplement for Independence Day,

"Israel's victory in the Six-Day War inaugurated a period of security, euphoria and economic growth and prosperity in Israel."[11] Owning private cameras became more common on kibbutzim, diminishing the need to rely on one kibbutz photographer. Thus, the combination of financial constraints during the period of the study, combined with strict kibbutz lifestyle and socialist ideology, Zionism and visions of utopia, created a platform for a unique visual language in relation to creating the image of the ideal hike and ideal hiking moments, as can be seen in the photographs of Alon.

Figure 1: Palmach Eretz Israel, platoon no. 1, marching in Vadi Yarka, 1944. Courtesy of curator of the Palmach photographic archive.

Kibbutz youth hikes photographs resembled and emulated a military style as can be seen in Figure 1, which was common in the Palmach. The Palmach ("strike forces") was the elite fighting force of the *Haganah,* the underground army of the Yishuv (Jewish com-

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Yediot Achronot, April 23, 2007, pp. 2–3 [Hebrew], https://historama.com/online-resources/articles/israel/israeli_economy_since_six_day_war_1967_2007.html.
[11] Bernard Reich, *A Brief History of Israel*, 2nd ed., New York: FactsOnFile, Inc., 2008, p. 85.

munity) during the period of the British Mandate for Palestine. The image of the hikers, walking in line, in regiment, are recurrent visual motifs of Palmach photographs. As Rabinaeu explains: "The Palmach scout came to embody the 'new Jewish identity' – the person of action who knew every corner of the Land and was willing to fight for it. After the War of Independence, when Israel's boundaries still were not secure, and control over outlying areas was still contested, the intrepid hiker exploring the country's frontiers remained a Zionist culture hero."[12]

Figure 2: "Traveling into the horizon." Judean Desert. Photograph by Azaria Alon, 1958.

In Figure 2 we see a line of hikers photographed from a distance. Alon observes the group from afar, guiding the viewers to see them through his eyes. In his photographs, the hikers often appear as small figures in the frame. The composition is divided into thirds in which the people appear as dark spots against the horizon. Although they are dominant in the composition, the landscape and the sky fill up

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[12] Shay Rabineau, *"Hiking in Israel: Why Are These Trails Different?"*, *AJS Perspectives: The Magazine of the Association for Jewish Studies* (2014), http://perspectives.ajsnet.org/the-land-issue-spring-2014/hiking-in-israel-why-are-these-trails-different.

most of the frame. Alon intentionally positioned himself on another cliff in order to capture this image. The sky is cloudy, the hikers are photographed from below, all of which bestow a dramatic effect on the hike and the hikers.

Low angles, which visually empower the hikers, and wide-angle lenses to capture the entire group of hikers, enabled creating images of the power of the masses, which coincided with kibbutz socialist ideology. The military style of walking in line, in regiments, carrying their packs on their backs, became familiar signs in Alon's photographs.

Figure 3: Seminar of guides of Hakkibutz Ha'me'u'had movement. Photograph by Azaria Alon, 1954.

In Figure 3 we see a photograph taken from a training seminar for the guides of the youth hikes run by Alon. The rifle is casually positioned amongst the hikers, who appear busy reading an edition of the kibbutz daily paper *La Mer'hav*. The rifle is propped in the fore-ground of the frame, between their legs, in the form of a neutral aux-iliary, which does not appear to threaten or protect the hikers/readers. It does not attract more attention than the backpacks strewn on the ground, as if the danger is a normative and integral part of the hike. The desert landscape exists behind their backs and introduces a ten-

sion between the hikers and the desert. In spite of the merry appearance of the hikers, the landscape behind their backs exists as a threat to be reckoned with.

Figure 4: Eilat. Photograph by Azaria Alon, 1955.

In Figure 4 the composition is balanced, the landscape fills most of the frame. The line of hikers appears as a dark silhouette on the horizon, blending into the trail. In the foreground, a few individual hikers wearing a typical Israeli hat known as a *Kova Tembel* can be distinguished.[13] Their attire generates a sense of familiarity towards the hikers. The breathtaking landscape shows the shades of the ground in hues of black and white and is photographed with great depth of field. The composition leads the eye of the viewer towards the horizon; the eye follows the curves of the trail while the hikers gradually disappear into the desert cliffs. The hikers dot the trail all the way to the horizon. The overbearing landscape absorbs the hikers, as if they are swallowed into the desert. The tension between the hikers and the desert wilderness, alongside the desire to create a visual sense of balance and control appear in this photograph, in the

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[13] Oz Almog, *The Sabra: The New Creation of the New Jew*, Berkeley, CA: University of California Press, 2000.

way it is framed and cropped, and in the way the photographer positions himself at the end of the trail to capture this precise tension.

The physical prowess of the young boys and girls served as a strong visual element in the photographs. The vision of the hiker/pioneer/Zionist/youth against the desert landscape was not just a visual image but also an icon of a value system. Hiking in the trails of *Eretz Israel* was a test of patriotism in which one demonstrated one's allegiance to the country and the land. "In comparison to any hike, the desert hike tested one's physical and emotional ability. It tested your character and levels of humanity. The desert hikes awarded honor to the hikers, for being able to withstand the physical challenges."[14] The photograph itself becomes an act that appropriates the land and the landscape to the hikers and to the viewers. The photographs of the desert hikes turned from mere photographs into documentation of the process of formation of a national identity.

3. Summary

The youth hikes constituted a platform for creating photographic documentation that perpetuated the legacy of Zionist values. The covert and overt signs in the youth hike photographs correspond with a value system that depended on the myths and legacies of bravery and heroism encompassing the photographs.[15] The image of the hiker, the backpack, khaki clothes, boots, *kova tembel* hat, the trail, became part of an uncontested value system in kibbutz society and Israeli society. Zionist myths of redemption of the land were inculcated and incorporated into the reading of the images. The ideals read into the photographs were the love of the land, of the nation, heroism, conquest of the land, the group, the morale. Thus, the photographs of

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[14] Yuval Dror and Eli Shaish, *The Hike as an Educational Instrument for Values* (Ha'ti'yul ke'kli' Er'ech Hi'nu'hi), Tel Aviv: Tel Aviv University, 2013 (in Hebrew), p. 94.
[15] Edna Barromi-Perlman, "The Makings of an Icon: Analysis of Photograph of Israeli Soldiers", *Journalism and Mass Communication*, vol. 5, issue 6 (2015), pp. 298–308.

kibbutz youth hikes served as carriers of myths and legends. The more adventurous and dangerous the hike, the more the photographer aspired to create monumental photographs that could convey the magnitude and the glory of the hike. These photographs bear testimony to a consolidated, ideological society.

Consensual reading of these images still takes place, the legends and myths are recounted in the media. The formal construction of the photographs, the choice of imagery, the use of signs and symbols work hand in hand with the intentional promotion of ideology and Zionism. The photographs did not claim to show that the hike was strenuous, nor did they aim at criticizing or delegitimizing the hikes. No room existed for variation in the reading of the photographs, for interpretation of the visual information, or the related narratives, nor is there one today. In current Israeli society, hikes are still looked up to and aspired, be it by youth movements, the army, and the Board of Education. Paramilitary programs continue the tradition of implementing challenging hikes. International Jewish youth movements on Israel programs emulate them. Altogether, the value system developed on kibbutz at that time has not altered.

Ultimately, the kibbutz photographs of youth hikes became a phenomenon of not only influencing public opinion but also actually creating it and dominating it. The mechanism that promoted images of youth hikes has not subsided. The consensual reading of these photographs presents a phenomenon that sheds light on the mechanism of the construction of myths tied to photographs in ideological societies. The images of the youth hikes in the desert still maintain their grip as incontestable visual symbols of heroism. They have succeeded in overriding the hurdles of the changing times in a mechanism of constructing systematic visual symbolism.

Szilárd Engelhardt

A Way out of Semiotic Dualism
Lessons from Sign/Spoken Bilingualism Research

1. Introduction

Decades of linguistic research show that sign languages, used by deaf communities around the world, are full-fledged linguistic systems just like spoken languages. At the same time, most deaf signers are bilingual in at least one sign and one spoken language. They demonstrate a very specific linguistic configuration as they use an auditory-vocal and a visual-gestural language in their everyday life, extending our usual framework of bilingualism (focusing on two spoken languages). This brings us to a deeper understanding of the multimodal nature of language.

The present paper explores one specific part of this sign/spoken bilingual language use: the phenomenon of mouthing in sign languages. The word "mouthing" is used with a special meaning in sign linguistics. In simple terms, it refers to those visually perceivable mouth and lip movements of a signer which are produced when he or she silently utters words of a spoken language. This mechanism is not equivalent to silent speech as signers usually shorten and modify these movements of the mouth to fit the manual signing flow. But through lip-reading, it is possible for an interlocutor to infer the intended spoken words from the visual information. The case of mouthing is a hot potato in sign linguistics because it raises the fundamental question to what extent sign languages are intertwined with spoken language production.

There have been controversial scholarly approaches to find out whether mouthing belongs to a sign language system or is merely a contact phenomenon in certain sign discourses where a spoken language is also dominantly present. These approaches evolved around assumptions about sign languages which root in the idea of a duality

of spoken and sign language. However, this dualistic view fails to capture the actual reality of bilingual signers where these two systems are highly entangled.

This paper offers a holistic, inclusive perspective on sign/spoken bilingualism. According to it, elements from more than one linguistic systems (e.g. Hungarian and Hungarian Sign Language) are part of the actual linguistic repertoire of signers who make use of two languages dynamically to meet their socio-cultural needs. The case of mouthings obviously exemplifies that a dualistic view cannot provide a full picture of the complexity of linguistic expressions and draws our attention toward a more inclusive, holistic approach with which we can better understand the unique linguistic practice in bilingual deaf communities.

2. Mouthing in Sign Languages

Sign languages make use of multiple articulators in their meaning making processes. It is not just the hands that form the utterances, but other non-manual elements as well, like eye gaze, facial expressions, mouth movements, upper body positions, etc. One of these articulators, the mouth has been subject to serious disputes regarding its status in the system of a sign language.

Sign linguists distinguish two main types of mouth movements. According to a common-sense definition, *mouthings* are visual mouth movements in a sign language that originate in and are associated with the surrounding spoken language. In that, they are in contrast to mouth gestures, which are another type of mouth movements that emerge from the sign language itself.[1] In many sign languages, mouthings frequently accompany manual signs.

If we take a historical perspective on the research of sign languages, we can see a tendency in the early decades (beginning with the 1960s) to focus on the linguistic properties of manual structures.

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[1] Penny Boyes Braem and Rachel Sutton-Spence (eds.), *The Hands are the Head of the Mouth: The Mouth as Articulator in Sign Languages*, Hamburg: Signum, 2001.

Linguists like Stokoe, Klima and Bellugi or Padden among others contributed a great deal to the understanding of phonology, morphology and syntax in sign languages by analyzing the manual articulators predominantly. However, in the last decades research on non-manual elements gained more and more attention, reminding us – as Pfau and Quer suggest – that sign languages are not articulated entirely by the hand.[2]

Mouthing is obviously part of non-manual features. Moreover, it is the very feature that reveals connections to spoken language. Hence, this phenomenon has been widely discussed in the context of language contact and bilingualism.

Following the terminology of this field of research, today we can speak about mouthing being an example of *cross-modal language contact*. It occurs when a primary sign and primary spoken linguistic system interact which gives rise to features undocumented in spoken languages.

Already the early studies on British and American Sign Language pointed out various degrees of influence from spoken language on signing utterances. Later on Lucas and Valli[3] in the U.S., and Schermer[4] in the Netherlands described different sign varieties or different types of sign language use that are results from the spoken influence on the morphosyntax of sign languages and differ from the way of vernacular, authentic sign language use among deaf people. In this context they demonstrated on empirical data that mouthings also show various degrees of influence from spoken language. A more spoken-language-oriented signing uses mouthing which is in its visual formal characteristics closer to words; in contrast, mouthings in the vernacular sign language used among deaf people are often modified in form and function.

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[2] Roland Pfau and Josep Quer, "Nonmanuals: Their Grammatical and Prosodic Roles", in D. Brentari (ed.), *Sign Languages*, Cambridge: Cambridge University Press, 2010, pp. 381–402.

[3] Ceil Lucas and Clayton Valli, *Language Contact in the American Deaf Community*, San Diego: Academic Press, 1992.

[4] Trude Schermer, *In Search of a Language: Influences from Spoken Dutch on Sign Language of the Netherlands*, Delft: Eburon, 1990.

In the 1990s, on the pages of the German journal, *das Zeichen*, a series of articles discussed whether mouthings are part of German Sign Language or not. The discussion generated the need to have a closer look at this phenomenon. Most of the views were reflected in the *Hands are the Head of the Mouth* volume (see note 1 above).

In most of the studies, there is a reoccurring underlying theme or core issue. This has to do with the nature and status of mouthing in sign languages which is still not fully understood. Although many contributions acknowledge the continuum nature between a sign and spoken system, all the arguments come down to one single question: Can we see mouthing as part of a sign language system or is it rather a phenomenon caused by cross-modal language contact? Another way of asking the same question: Has mouthing been adapted to a sign language, being now part of its semiotic framework, or does it run as a separate linguistic code during signing?

If one takes the time to look at the various descriptive, socio-psycho and neurolinguistic studies on mouthing, one has to admit: there is empirical evidence for both possibilities. Still, the most recent studies on Australian Sign Language[5] and different European sign languages[6] come back to this question, indicating that, for some reason, a dualistic type of thinking is strongly attached to many investigations up to date. In my view, this leads to permanent confusion, which can only subside if we understand the interconnectedness of language systems in bilinguals. Instead of insisting on an implicit assumption, that a linguistic element in use must belong to one language system, in the next section I will offer a holistic perspective. With this, I emphasize the flexible and heterogeneous nature of a bilingual repertoire allowing elements from different systems to intertwine and interact in discourse.

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[5] Trevor Johnston – Jane van Roekel – Adam Schembri, "On the Conventionalization of Mouth Actions in Australian Sign Language", *Language and Speech*, vol. 59, no. 1 (2015), pp. 3–59.
[6] See e.g. Richard Bank – Onno Crasborn – R. van Hout, "Variation in Mouth Actions with Manual Signs in Sign Language of the Netherlands (NGT)", *Sign Language & Linguistics*, vol. 14, no. 2 (2011), pp. 248–270.

3. Holism in Bilingualism Research

If we attempt to follow back the "mouthing debate" to its roots, we have to reach out to the broader field of bilingualism research. The study of bilingualism, as François Grosjean reminds us, has generally been affected by what he calls a fragmental or monolingual view.[7] Many papers traditionally analyzed the interaction of elements coming from one or the other language and also evaluated the bilinguals' language production comparing them to monolingual behavior. Grosjean puts stress on the fact that a bilingual is a fully competent language user with a unique linguistic configuration. While monolinguals use elements of a single language, in bilinguals, elements are dispersed over two languages, which stay in a functional distribution.

Also, out of intensive language contact, a third system can emerge which is the combination of the two languages to the extent required by the environment. In some mixing patterns it is hard to define the source of elements as they are used very dynamically in a bilingual language production. The following three quotes from bilingualism researchers exemplify the idea of interconnectedness and nonseparability of elements of a linguistic practice:

> The co-existence and constant interaction of the two languages ... have produced a different but complete language system.[8]

> It is often misleading to force the outcome of language contact into the one or the other linguistic system assuming that this outcome is the sum of two pre-existing grammars.[9]

> Code-mixing discourses pose the question where a linguistic system begins and ends ... bilingualism challenges the picture

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[7] François Grosjean, *Studying Bilinguals*, Oxford: Oxford University Press, 2008.
[8] *Ibid.*, pp. 13-14.
[9] Penelope Gardner-Chloros, *Code-switching*, Cambridge: Cambridge University Press, 2009, p. 27.

of language as a structured, self-contained whole, an auton-
omous entity which is consistent within itself.[10]

This rather holistic perspective can also be applied to the sign/spoken
bilingual situation. In fact, this cross-modal bilingual situation can
shed light on such subtle workings of human language which have
not been discussed in spoken monolingual research that makes up the
large part of what we call linguistics.

The contribution of bilingualism research lies in that it gives
us a deeper understanding of language by challenging the theories
based on monolingual traditions. As many studies demonstrated in
the field, rules and models of grammaticality do not always apply to
the highly variable bilingual data.

Taking it one step further, holistic sign linguistics adds to this
contribution by dealing with the involvement of two modalities
revealing further phenomena unexplored by speech analysis: the
modality-effect influences the organization of linguistic materials in
undocumented ways. Section 4 backs up these statements by refer-
ring to data from empirical research.

4. Lessons from Empirical Data

Hungarian Sign Language (Magyar Jelnyelv or MJNY for short) bor-
rows visual mouth forms from the surrounding spoken language,
Hungarian, which is a Finno-Ugric language with rich inflectional
morphology. Based upon informal observations, native signers of
MJNY make use of these spoken inflections in mouthings.

For example: MJNY signers can use mouthings like "autó"
[car] vs. "autóval" [by car] or "autónk" [our car].

These occurrences are unique because they are strongly bound
to spoken Hungarian, including its grammatical characteristics, while
occurring in the morphosyntactical environment of a sign language.
This constitutes a very specific type of language contact that does not
appear in spoken languages.

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[10] Suzanne Romaine, *Bilingualism*, Oxford: Wiley-Blackwell, 1995, p. 234.

However, there hasn't been any notable scientific evidence on this subject yet. My interest in the issue led to a doctoral research project, which was dedicated to the systematic empirical investigation of Hungarian inflections in the mouthings of MJNY.

An MJNY video collection of interviews with Hungarian deaf signers served as the source of the empirical data. I investigated the production of six participants (110 minutes of raw material, 21 minutes of transcribed data with nearly 700 mouthing items) in order to find MJNY utterances with inflections in mouthings. The data analysis shows that the main inflectional categories used by the signers are *Person* and *Number* on verbs and nouns; other relevant categories are *Case* and *nominal Number*.

I am going to highlight what I learned from this research project and will put it into the context of a holistic perspective in order to overcome the dualistic questions about the nature and status of mouthings.

Finding evidence for spoken inflections being used in MJNY mouthings suggests that there is much more possible than one could assume based on the literature. Inflected mouthings are usually interpreted as contact phenomenon and are not expected to show up in such vernacular sign language use demonstrated in my video corpus. The findings imply that a bilingual language user can incorporate even grammatically meaningful markers from a spoken language into the signed utterances.

Instead of posing the question whether these instances constitute part of MJNY or not, I would like to draw the reader's attention to the linguistic reality in deaf communities. Various studies stated that on the one hand mouthings are omnipresent, on the other hand their formal characteristics are highly variable, not consistent in use, thus hardly predictable. This also applies to the Hungarian data. In fact, sign language users, like other bilinguals, make use of many mixed patterns, which underlie episodic, dynamic changes in these signing discourses. If we take a bilingual perspective here, we could argue that all elements belong to one usage-based "feature bubble". Let us call it the bilingual repertoire, an expression of the unique linguistic configuration of the users. Here we look at language as

practice rather than language as system. With this perspective we can understand that it is absolutely possible for a sign language to exploit communicative resources of another linguistic system, if it fits the user's sociocultural needs and seems to be supported by some kind of communicative economy. In that, mouthing with inflection, this unique code-mixing pattern, is an example of the multimodal nature of human communication.

5. Conclusion

This paper has given a short introduction to the subject of mouthings in sign languages. As pointed out, there were various attempts to argue for or against their status as part of sign language systems. In contrast, I showed that a holistic, bilingual view offers a better explanation for their inconsistent, unpredictable, yet omnipresent occurrence in sign languages. My own empirical data from Hungarian Sign Language also confirm that a bilingual's language practice clearly indicates the dynamic continuum between two linguistic systems in action, where one cannot assign certain elements to one monolingual system. Thus, mouthings with spoken inflection can be seen as part of the MJNY language practice. Whether we see it as part of the system of MJNY, depends on one's theoretical position. This statement, however, should still be supported by further empirical work both in psycho- and sociolinguistics. Nevertheless, we can conclude that bilingual language use, especially if it involves both the auditory and visual modality, can offer a new window to looking at multimodality in human language and communication.

SCIENCE AND VISUALITY

Péter Neuman

The Surprising Usefulness of an Intuitive, Visual Approach to Quantum Field Theory

1. Introduction

The development of physics in the 20th century can certainly be characterized, among other things, by the process of losing intuition as a tool for solving problems. It is not only that intuition is absent from the toolbox of theories like quantum mechanics or relativity, but if we attempt to use the traditional forms of intuition in reasoning, we can easily be brought astray, as conclusions reached with the help of intuition can lead to contradiction. The arguments in which intuition can be viewed as one of the premises, may lead to contradiction, thus may render the conclusion invalid using a reductio ad absurdum scheme. We are left without a theory in this case, provided we maintain the validity or the truth of the intuitive premise. The double-slit experiment that plays an eminent role in quantum physics serves as an example for this process. Light, i.e. photons or other microscopic particles, e.g. electrons are sent through a wall with two slits on it, and we place a detector behind the wall. The points of absorption form a wave interference pattern, even if only one particle is sent through the barrier. The experiment serves as one of the proofs for the particle-wave duality of elementary objects, photons, electrons, protons, etc. If we are unwilling to adopt the non-intuitive wave-particle duality here, we will not be able to provide explanation for the peculiar behaviour of the microscopic entities like photons or electrons. It is worth distinguishing theoretical arguments that lack intuition from arguments that are counter-intuitive, i.e. using intuition as a premise would lead to just the opposite result to what is considered to be true, experimentally verified or accepted by the scientific community. While in the first case, intuition simply makes it impossible to find a solution to the problem or answer the question, in

the second, taking the intuitive premise seriously will actually imply a result that cannot be accepted. 20th and 21st century physics provides examples for both phenomena.

In spite of their ubiquitous nature non-intuitive or counter-intuitive theories do not seem to be accepted by everybody in scientific communities. The counter-intuitive nature of quantum mechanics presents itself in full bloom when we approach the measurement problem. For a macroscopic human being it is almost impossible to really engage with the idea that measurable physical quantities simply do not exist before a measurement is performed. According to the Copenhagen solution/interpretation of the measurement problem, quantum mechanics can only provide us with probabilities corresponding to different measurement outcomes. Moreover – following the conventional treatment – it is not possible to amend the theory in any way that would avoid the probabilistic interpretation, in other words, "hidden variables" containing the missing information (i.e. the macroscopic, measurable state in which the system resided before the measurement) may not exist without abandoning quantum mechanical basic principles.

Einstein's unapproving remark about the probabilistic nature of quantum mechanical measurement outcomes is well-known. The debate, however is not resolved even today. In the middle of the 20th century David Bohm[1] developed an interpretation of quantum theory that does not rely on the probabilistic measurement handling. Although his theory suffers from ambiguities, some physicists and philosophers of science these days subscribe to the Bohmian interpretation. Even recently[2] several works have been published in the hope of

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[1] Among other publications, see David Bohm, *Causality and Chance in Modern Physics,* Philadelphia: University of Pennsylvania Press, 1957; David Z. Albert, "Bohm's Alternative to Quantum Mechanics", *Scientific American*, vol. 270, issue 5, pp. 58–67.

[2] For contemporary accounts see e.g. A. S. Sanz, "Bohm's Approach to Quantum Mechanics: Alternative Theory or Practical Picture?" (2018), cf. https://arxiv.org/abs/1707.00609; or a recent book addressing the issue in a holistic manner: Adam

tackling the issue. Although this is far beyond the scope of the present paper, I need to note that the reason for creating microscopic theories that are or happen to be closer to our natural intuitive worldview is not always and not only the wish to reestablish the power of intuition,[3] however this may be one of the results of the efforts just mentioned.

2. Quantum Field Theories and Feynman Graphs

Quantum field theory, the quantum theory of fields constitutes the base of elementary particle physics, which is rightfully considered to be one of the most successful physical theories both because of its unprecedented accuracy and predictive power. The series of triumphs of Quantum Field Theory became clear in the 1920s and 1930s after several attempts to merge quantum mechanics with special relativity in order to get a suitable theoretical framework for the study and description of elementary particles. The basis of the selection between the different potentially adopted theories was that the winner theory should not clearly and robustly violate generally accepted physical assumptions (e.g. probability of finding a particle in a given region of space-time should not be lower than zero, etc.), should predict outcomes of experiments with a desired accuracy, and should be able to reproduce the results of known and accepted experimental and theoretical results. Notwithstanding the fact that standard or canonical quantum field theory even today suffers from painful difficulties,[4] poisoning inconsistencies and a series of arbitrariness, quantum field theory not only prevails, but several authors claim that this theory is

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Becker, *What is Real?: The Unfinished Quest for the Meaning of Quantum Physics*, London: John Murray, 2018.

[3] In Bohmian quantum mechanics certain paradoxes immanent in quantum mechanics disappear.

[4] The American physicist genius Edward Witten refers to quantum field theory as "the most difficult theory of modern physics".

the only possible reconciliation of quantum mechanics and special relativity.[5]

The quantum field theoretic approach can be applied for different physical quantities that are described via fields, i.e. functions defined over relativistic space-time. The quantum field theory of electromagnetism is quantum electrodynamics, the elementary particle of the field is the photon, the quantum of the light. It was Quantum Electrodynamics that produced the first great successes and also the immense difficulties of the approach. These difficulties arose from the extreme complexity of the calculations, but also from the peculiar fact that the results of certain calculations do not make physical sense, e.g. we arrive at divergent, i.e. infinite results. Different approaches have been developed to overcome these difficulties, approaches that can be referred to as interpretations of Quantum Electrodynamics. The so-called Tomonaga-Schwinger technique is one of them. It successfully provides a recipe for performing the calculations and also to get rid of the infinities of the theory. This technique on the other hand is quite demanding and not intuitive in the original sense of the world, either.[6] On top of this, the calculations became extremely demanding. So demanding in fact, that, at the beginning only a handful of physicists were able to complete them.

In 1948 Richard Feynman introduced a visual, diagrammatic approach,[7] the so-called Feynman diagrams to help performing calculations (and finding meaningful results) in quantum field theory. His treatment that is still widely used today, is not only a useful tool for determining physical quantities (e.g. scattering probabilities, etc.),

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[5] See e.g. Steven Weinberg, *The Quantum Theory of Fields 1*, Cambridge: Cambridge University Press, 2009.

[6] Renormalization, the technique that eventually renders unwanted infinite or zero results of calculations finite, can in some sense be called intuitive, while mathematically rather arbitrary, however the intuitiveness of the process here is rather technical, in other words, we guess what should be done in order to get a physically interpretable result.

[7] D. Kaiser, "Physics and Feynman's Diagrams", *American Scientist* 93 (March–April 2005).

but can also be viewed as a visual, intuitive representation of quantum field theoretical processes.

The scattering amplitude of two electrons (i.e. the probability of finding the particles after the process in one state or another can be obtained by performing this calculation (Figure 1):

$$K^{(1)}(3, 4; 1, 2) = -ie^2 \int \int K_{+a}(3, 5)K_{+b}(4, 6)\gamma_{a\mu}\gamma_{b\mu}$$

$$\times \delta_+(s_{56}^2)K_{+a}(5, 1)K_{+b}(6, 2)d\tau_5 d\tau_6,$$

Figure 1[8]

Without going into the details or explaining how to deal with Feynman diagrams, let me show the graph that corresponds to the equation above (Figure 2):
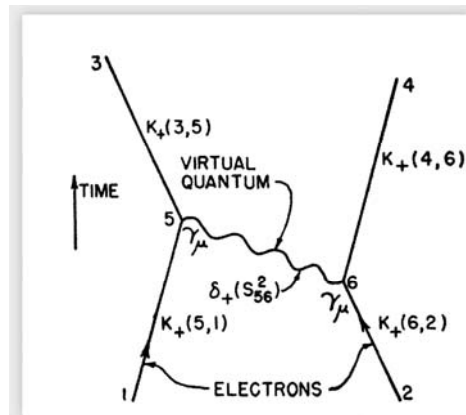
Figure 2[9]

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[8] Equation taken from Richard P. Feynman, "Space-Time Approach to Quantum Electrodynamics", *Physical Review*, vol. 76, no. 6 (September 15, 1949).
[9] Graph taken from *ibid.*

There are a set of rules for using Feynman diagrams to find probabilities. These rules are not difficult to remember, and they are easy to use. The introduction of Feynman diagrams thus make calculations much simpler, and in some cases automatic. According to Frank Wilczek, Feynman graphs are so important that the "calculations that eventually got me a Nobel Prize in 2004 would have been literally unthinkable without Feynman diagrams, as would my calculations that established a route to production and observation of the Higgs particle".[10]

It has been shown in a seminal paper by Freeman Dyson that the different approaches are equivalent, they give the same result in a series of important cases.[11] Although Feynman diagrams were originally introduced for a certain type of field theories, namely Quantum Electrodynamics, they can be successfully used in other quantum field theories, too.

It is worth noting that Quantum Field Theory was born through relying on two profoundly counter-intuitive physical theories of the 20th century, quantum mechanics and special relativity. The notion of particles scattering in given well-defined space-time points for example is missing from the theory due to the uncertainty principle of Heisenberg. Feynman graphs on the other hand rely exactly on scattering events in certain points of space and time. What we are prescribed to do with the individual Feynman graph calculations is significantly different from what we should be doing in classical physics, but the classical notion of intuition is already present in Feynman's visual approach. In other, words, Feynman is using an imagistic reasoning for solving a problem of a theory that lacks images per se.

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[10] Frank Wilczek, "How Feynman Diagrams Almost Saved Space", 2016, cf. https ://www.quantamagazine.org/why-feynman-diagrams-are-so-important-20160705.
[11] F. J. Dyson, "The Radiation Theories of Tomonaga, Schwinger, and Feynman", *Phys. Rev.* 75 (1949).

Feynman graphs may look like classical particle trajectories, and while performing calculations with their help, physicists frequently use peculiar expressions, a language that reminds us of classical, intuitive physics. It is indeed a different dialect, or rather pidgin language, similar to the one Peter Galison [12] introduces when he studies computer simulations. Just like computer simulations, Feynman diagrams also introduce a new stage, a new world in which the physical processes under study take place.

3. Feynman Diagrams Interpreted as Thought Experiments

If we look at the Feynman diagrams as a type of thought experiment based on Quantum Electrodynamics, the argumentative imagery reasoning mentioned above suddenly becomes familiar. Several well-known thought experiments use the technique of using visual arguments to prove or refute a scientific proposition. [13] The most interesting question in thought experiment cases is how the thought experiment arrives at otherwise unknown contingent results about nature without performing real observations. According to a sometimes disputed claim by Norton, thought experiments cannot be anything else but inferences already existing in the theory. [14] Note that the same question can be asked in the case of Feynman diagrams. If the results drawn from Feynman diagrams were already present in the original theory, why could not we derive them without the help of Feynman's

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[12] Peter Galison, "Computer Simulations and the Trading Zone", in Peter Galison and David J. Stump (eds.), *The Disunity of Science: Boundaries, Contexts, and Power*, Stanford, CA: Stanford University Press, 1996, pp. 119–157.

[13] Tamar Szabó-Gendler, "Thought Experiments Rethought – and Reperceived", *Philosophy of Science*, vol. 71, no. 5, Proceedings of the 2002 Biennial Meeting of The Philosophy of Science Association, Part II: Symposia Papers, ed. by Sandra D. Mitchell (December 2004), pp. 1152–1163.

[14] John D. Norton, "Why Thought Experiments Do Not Transcend Empiricism", in Christopher Hitchcock (ed.), *Contemporary Debates in Philosophy of Science*, Oxford: Blackwell, 2004, pp. 44–66.

technique? The question is very similar to the one that can be asked about computer simulations. Certain results of physical theories are impossible to find without simulations, and these results are sometimes answers to fundamental questions, even ontological ones.[15] If Feynman diagrams are construed as thought experiments in order to establish the link between possible inferences inside the underlying theory (without thought experiments) and the result of the thought experiment, the correspondence between the visual world of the Feynman diagrams and the non-visual, non-intuitive one of the original theory needs to be studied. Dyson's proof seems to show that at least in this case the thought experiment is indeed equivalent to inference. However, if we accept Wilczek's remark, the results can only be found in Feynman's world. The results, i.e. the solutions of the physical problems are the objects that describe the behaviour of the system to us. In a sense, the underlying theory, the theory from which the equations and the Feynman diagrams are derived, are just the means to an end. In this sense, we may say that Feynman's world does have a constituent that the theory without the diagrammatic approach lacks, thus Norton's claim turns out to be false. Moreover, this constituent is in fact the most important part of the enterprise, the description of the behaviour of the system. It cannot be overestimated that the imagistic reasoning replaces a whole series of lengthy calculations, and this is the reason, or one of the reasons, why certain results cannot be derived without the help of Feynman's diagrams. The situation is analogous to that of the computer simulations, a difference being though that Feynman diagrams have a visual character, while computer simulations do not.

4. Conclusions

Feynman diagrams may be considered as nothing else but efficient mnemotechnical tools that help us perform and finish the complicated and lengthy calculations quantum field theories require. How-

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[15] Just like in the case of the Higgs particle, as referred to by Wilczek, *op. cit.*

ever, due to mainly their visual character, they do not only represent conventional quantum field theory (i.e. quantum field theory without Feynman diagrams), but create a completely new world, in which quantum field theoretical processes gain new meanings and understandings. This new meaning seems to be closer to our classical, intuitive view of nature, and it is possible that this is one of the reasons why otherwise extremely demanding calculations become easier to complete.

We can view Feynman's diagrammatic approach as a certain type of thought experiment. The question whether these thought experiments can provide anything that was not already present in the conventional form of the theory is to be answered affirmatively. Hence, the existence of this diagrammatic approach may contribute to the debate about the epistemological status of thought experiments in general. It is unquestionable that the remarkable nature of Feynman diagrams is strongly connected with their visual character in a scientific field that does not only lack intuitiveness and visuality, but because of its microscopic character even the concept of *the visual* is hard to construe.

Catherine Allamel-Raffin – Jean-Luc Gangloff

How to Classify Images in Natural Sciences?
A Case Study in Nanoscience

1. Introduction

Images in scientific papers have often been considered by non-specialists as mere illustrations. It is the propositional content, in contrast, which has been considered as essential and self-sufficient. Philosophers in particular have often underestimated the place of images in scientific activities and results, victims of their "language-using ethnocentrism" as William C. Wimsatt has called it in his paper "Taming the Dimensions – Visualizations in Science".[1] We believe that we must reconsider the role of images and their epistemic value both in research and in scientific papers. The present contribution wishes to be a modest footstep on this pathway.

One can easily observe that images of different kinds are widely used in nanoscience. Our specific aim in this paper is to propose a classification of images ordinarily produced in a nanoscience laboratory: primary images, secondary images and computational simulation images.[2] This classification is relying on ethnographic studies one of us conducted in a nanoscience lab. These studies took place in the Laboratoire Groupe Surface/Interface (GSI) of the Institute of Physics and Chemistry of Materials in Strasbourg (IPCMS –

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[1] William C. Wimsatt, "Taming the Dimensions – Visualizations in Science", *PSA* 2 (1990), pp. 111–138.

[2] Catherine Allamel-Raffin and Jean-Luc Gangloff, "Scientific Images and Robustness", in *Characterizing the Robustness of Science: After the Practice Turn in Philosophy of Science*, in Léna Soler – Emiliano Trizio – Thomas Nickles – William C. Wimsatt (eds.), *Boston Studies in the Philosophy of Science* 292, Dordrecht: Springer, 2012, pp. 169–188; Anne Marcovich and Terry Shinn, *Toward a New Dimension: Exploring the Nanoscale*, Oxford: Oxford University Press, 2014.

France), which mainly carries out experimental research on the structures and properties of materials' surfaces. Each class of images fulfils different epistemic functions, and we will especially focus on those of simulation's images.

In a second part of our paper, we will underline the fact that imaging practices entail their own sources of problems, problems that can be crucial when images are considered as a part of the justification process. The direct consequence of these problems is that the aim of the researchers is not to provide an absolute truth, but robustness – in other words, a convergent network of evidence.

2. A Classification of Images Produced in Nanoscience

As already mentioned in the introduction, scientific research in nanoscience gives rise to three categories of images, all of which are computer-dependent: primary images, secondary images, and computational simulation images.

2.1. Primary Images

They are produced by instruments that acquire data. These data are then transduced by a specialized algorithm linked to a computer which in turn generates a topological or associated depiction of the object under investigation. The instruments which are used to obtain primary images are, in the present case study, the transmission electronic microscope (or TEM), the scanning tunnelling microscope (or STM), the atomic force microscope (or AFM), and so forth. Instruments and their image packages are purchased equipped with their own imaging algorithms. While some variability in algorithms is possible, most scientists retain the initial package.
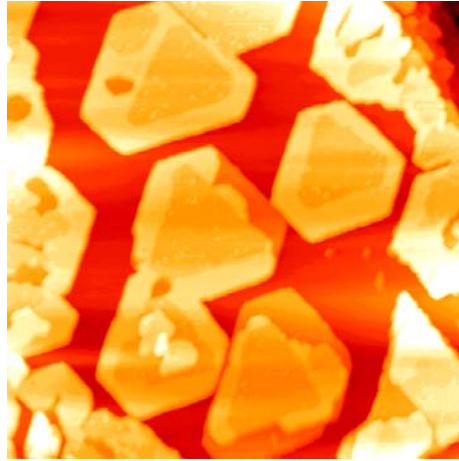
Figure 1: Copper aggregates on gold / C. Boeglin GSI-IPCMS.

Figure 1 is an example of a primary image produced with a STM. It represents nickel aggregates on a copper substrate. What is important here is to notice that the primary images fulfil a special epistemic function: for the scientist, they are the only link with a so-called material "reality", whatever we put under that notion. Even if these images are of poor quality, scientists will keep them in their archives.

2.2. Secondary Images

Secondary images issue from the primary images and retain their foundational data (Figure 2). They require the introduction of a computer graphics program specialized in image processing. For example, on the top here, we find a primary image produced with a STM. It represents the topography of rhodium aggregates on a gold substrate. The curve below is the relief observed along the white virtual line on the primary image. This curve is the secondary image. The information provided by this curve is far more precise. This relief here is amplified to make it clearer and more readily explored.
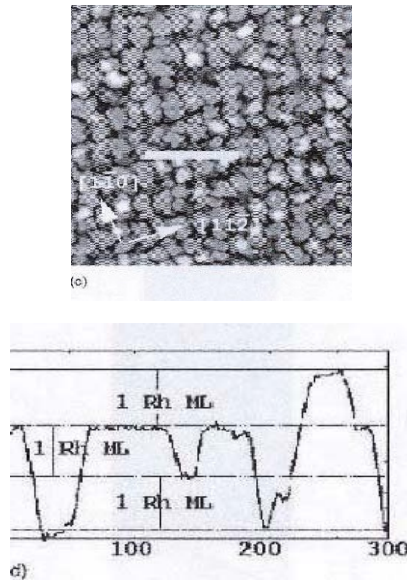
Figure 2: STM: Rhodium on gold / 300K / I. Chado/GSI-IPCMS.
Relief along the virtual line.

To retain the foundational data from primary images may take different visual forms. For example,

- an item that optically is barely perceptible in the background may be moved to the foreground;
- a target item lost in a jumbled cluster can be isolated;
- an object can be magnified in order to see certain features.

Among many other features, colour is part of the arsenal of nanoscience research secondary images. It is employed in order to differentiate the various parts of an image and to distinguish the phenomenon under study from its environment. The work engaged in producing secondary images is often quite time consuming. It consists of much tinkering as scientists introduce one computer-graphics command after another, in an attempt to obtain the wanted image clarification.

The information taken from the primary image is not changed. Only the capacity to enhance visual information contained in the ini-

tial rendering is affected with secondary images. So, clearly, the general epistemic function of this latter type of images is to enhance information contained in the primary images.

In our example, the scientist wanted to show that the growth of rhodium on gold is not uniform. This relief shows precisely that the growth is not going atomic layer by atomic layer. So we can see on this relief that the growth of rhodium is not uniform. The phenomenon, in that case, concerns a very small part of the sample: the researchers are suggesting that what is happening here can be relevantly extended to the whole sample.

2.3. Computation Simulation Images

The third category of images prevalent in nanoscience research, what we refer to as computational simulation images, represents computational output as form. The making of these images is based only on algorithms. There is no direct link with entities from the material world. The algorithms try to reproduce in a visual form the physical laws and the specific conditions of a real experiment (temperature, pressure, etc.).

Often, simulation images offer a high level of detail. For a given phenomenon, the number of atoms can be counted and the element is specified. One can identify a defect, for example.

The different elements that appear in a simulation image are presented in a crisp and distinct fashion. Entities are always neatly presented and well distinguished. It almost appears that they have been cleansed and purified in order to enhance readability and to forge understanding.

Let us give an example: a primary image produced with a TEM representing a mercury compound 1223 (Figure 3). This primary image is compared to a simulation image. In the final paper written by the scientist, the two images are presented side by side. As we can see, the simulation image is more distinct and clearer. The scientific information appears in a more straightforward way.
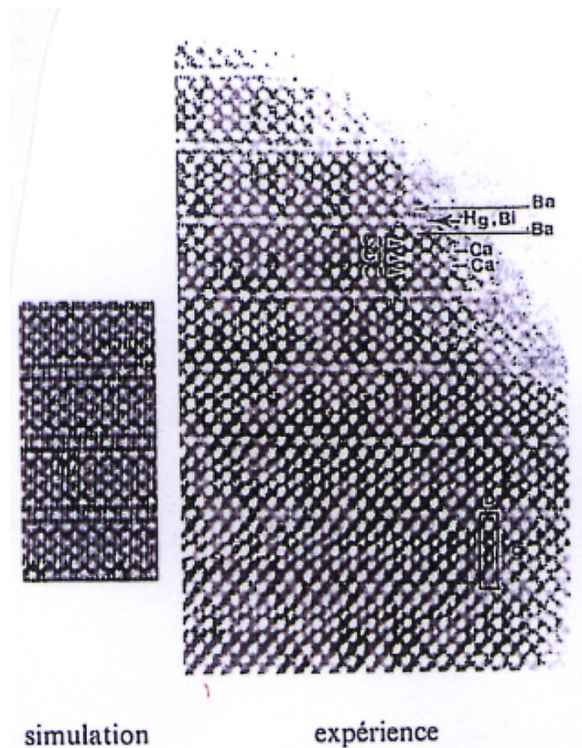
Figure 3: On the left, the simulation image; on the right, the primary image: TEM image of a mercury compound 1123 (M. Hervieu, Laboratoire de cristallographie et des sciences des matériaux, UMR CNRS 6508, Caen).

3. The Computational Simulation Images' Functions

We will distinguish three functions: (1) they can be used as an alternative to real experimental processes (because these processes are too expensive, or time consuming or impossible to achieve); (2) they can help to explain and to predict physical processes; (3) they may constitute an aid for decision making in case of controversial results produced by different instruments.

3.1. Simulation Images Can be Used as an Alternative to Real Experimental Processes

Because of the relative high speed and low cost of simulation images production, it is possible to generate a large number of images, where each image represents a modification in the empirical data introduced in the program. It is easier to do a simulation that requires days, weeks or months, than to carry out some metrological experiments that require years of preparation.

3.2. Simulation Images Can Help to Explain and to Predict Physical Processes

Here is an example which includes simulation images of perovskite sample produced with a TEM (Figure 4). First, scientists prepare a perovskite sample and then they produce pictures of it with a TEM.
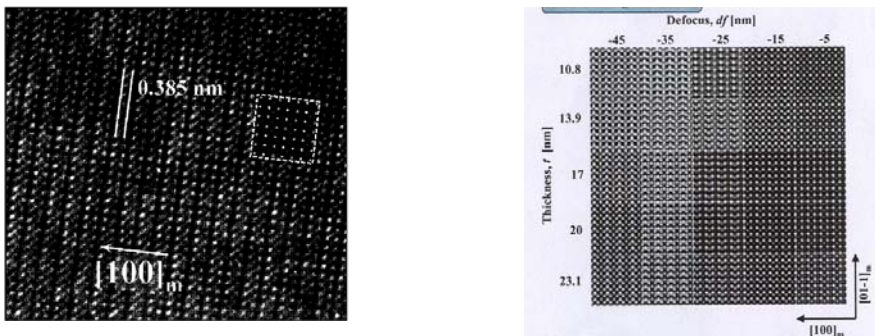
Figure 4: Primary image + Simulation image (little square).
TEM Perosvkite: C. Ghica / GSI-IPCMS.
Simulation image: C. Ghica / GSI-IPCMS.

The problem they face with that microscope is that they cannot measure the thickness of perovskite on the TEM images. What is considered, both by the experimenter and by the simulation specialist, to be a successful simulation image is one that corresponds to the primary image generated in the course of a physical experiment.

Simulation practitioners working with experimenters (sometimes, it's the same person) frequently request that the latter first provide a primary image as a starting point for the choice of programs and selection of empirical values. This is intended to guide the efforts of simulation. The range of analytic scenarios available to simulation is so considerable that it is advisable to first anticipate in which direction to focus. In our example, the experimenter gives the primary image to the simulation specialist. The latter can then calculate the different thicknesses of perovskite. To do so, the simulation specialist has to produce simulation images. To create them, he can mathematically vary an important empirical value which is the defocusing of the TEM. That is not possible in a systematical way in the real experiment. The simulation specialist proceeds by using a trial-and-error method. In a third phase, the result obtained is so good that we can hardly distinguish the difference between the primary image and the simulation image. The simulation image allows the researchers to specify that the thickness of perovskite is probably of 17 nanometers. In the final publication, the simulation image is superimposed on the experimental image.

In this case, the simulation image permits to read the primary image, to explain what exactly is physically going on with the sample, focussing on one of the properties of the experimental process.

3.3. Simulation Images May Constitute an Aid
for Decision Making in Case of Controversial Results
Produced by Different Instruments

For example, in the lab where one of us spent a lot of time, scientists came across a problem: two different instruments (STM and X-Ray diffractometer) gave rise to two controversial results. Experimenters tried to solve the problem, again and again, without finding any solution. So, they asked the simulation specialists for help. Simulation images consequently produced gave an argument for one of the competing interpretations against the other. The STM data seemed to be the reliable one. Two years later, the STM increased its capacity

and the experimenters succeeded in producing primary images, consistent with the previous simulation images.

4. Sources of Problems Encountered by Researchers while Producing their Images

In this section of our paper, we will see that the production of images (primary, secondary and simulation images) generates a lot of problems. We will focus our attention on the production of primary images. In nanoscience, during this phase, researchers encounter mainly three kinds of problems:

First, there is *no external macroscopic referent.*

Any comparison of the image with a macroscopic object proves to be impossible because the image is not produced using visible light but, for example, electrons in the case of TEM. Scientists are in a way dealing with the effects of an invisible material reality.

Second type of problem: it is *hard to succeed in distinguishing*, with the greatest efficiency possible, *artefacts from the relevant signal.* It is difficult to establish a difference between an artefact and a real entity because the image is based on the interaction of three elements:

- the radiation source (in the case of TEM, for example, the beam of electrons),
- the sample,
- the computer which enables the image to be produced.

These three elements are daily sources of artefacts and it is difficult to be sure that what is on the image is not induced by these multiple artefacts.

Third, it is *difficult to generalize the meaning of such images.* Indeed, they are produced using a local investigation method (often a microscope which enables the visualization of the sample's areas comprising thousands of atoms). The scientist must be sure that this local meaning will be valid for all the same kinds of samples (that is

to say, billions of atoms). We could naively believe that researchers reiterate their experiments in order to validate their working hypothesis.

But in this type of research, it is impossible to reproduce strictly speaking the same experiment twice, since the quality of the samples deteriorates when they are being examined under the microscope. Therefore, it is necessary each time to produce another sample which will always be quite different from the previous one. The researchers aim to get the largest consistency possible between the results obtained with different imaging processes. These results are each time localized, contextualized and collectively constructed. At the end of the process, scientists try to develop in their papers a convergent network of evidence, using experimental strategies well-described by Allan Franklin,[3] which will enable them finally to give a generalized status to these localized results. For example, in the previous case of perovskite sample, the primary image obtained with a TEM was not readable enough: the scientists did not have enough precision about the sample's thickness. To get better data about thickness in this case, they asked simulation specialists for help. The simulation image has also a relatively weak degree of reliability. For instance, the simulation specialist may also have distorted or lost some important information during the simulation process. But recognizing the similarities between the images leads to the conclusion that results produced converge and allowed more precision. In this case, the thickness of perovskite is surely of 17 nanometers at that place of the sample, but it is not absolutely certain. So, we should speak about robustness in such cases, instead of truth.

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[3] Allan Franklin, *The Neglect of Experiment*, Cambridge: Cambridge University Press, 1986; Allan Franklin, *What Makes a Good Experiment? Reasons and Roles in Science*, Pittsburgh: Pittsburgh University Press, 2016.

5. Conclusion

Because scientists are facing huge problems when producing their images (primary, secondary, and computational simulation images), they can not pretend to "demonstrate" their results in their papers. They have to propose an argumentation. The nanoscientists get with their data or images only what we can call "pieces of evidence" or "elements of proof". They do not start with true premises to get in the end, by following the rules of formal logic, absolutely true conclusions. Thereby, they are forced to propose in their papers the more convincing way to expose their pieces of evidence or elements of proof. What the scientist aims to produce is a kind of Peircean cable constituted of many fibers (each fiber is an argument designed on primary, secondary or simulation images). A cable is robust because it is made of many fibers and, unlike a chain, the solidity of which depends on its weakest link, the cable remains robust even if one or two of its fibers break.[4] And that is robustness.

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[4] Werner Callebaut, *Taking the Naturalistic Turn, Or How Real Philosophy of Science is Done*, Chicago: The University of Chicago of Press, 1993, p. 57.

Luc Pauwels

A Visual Framework for Producing and Assessing Visual Representations in Scientific Discovery and Communication

1. Introduction: Key Elements of a Visual Framework

The multifaceted issue of visualization in science involves the complex processes through which scientists develop or produce (and communicate with) imagery, schemes and graphical representations, computer renderings or the like, using various means (ranging from a simple pencil on paper to advanced computers or optical devices). Therefore, not just the result, but also how it was attained (i.e., the implicit or explicit methodology in the broad sense of the word) and the subsequent uses to which the result is put, should all be scrutinized as to their impact on the nature of what is visually represented and the ways in which this representation can be employed. Visual representations in science differ significantly in terms of how they relate to what they purport to represent (i.e., their representational and "ontological" status), the means, processes and methods by which they are produced, the normative contexts involved, the purposes served and the many ways in which they are used and combined, to name but some of the more crucial aspects.[1]

2. The Varied Nature of the Referent

The array of objects or referents of visual representations in science is very broad and of a highly heterogeneous nature. Visual representations in science may "refer" to objects that are believed to have

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[1] For a more elaborate discussion of this framework see Luc Pauwels, *Reframing Visual Social Science: Towards a More Visual Sociology and Anthropology*, Cambridge: Cambridge University Press, 2015.

some kind of material or physical existence, but may equally refer to purely mental, conceptual, abstract constructs and/or immaterial "entities".

Material or physical referents may have visual characteristics that are directly observable to the human eye (e.g., various types of human interaction, the external structure of animals, trees, etc.). On the other hand, there are objects and phenomena with aspects that only become visible with special representational means and devices (e.g., they can only be observed using special techniques or instruments such as high-speed photography, satellite image transmission, a telescope, a microscope, or an endoscope). The reason is that either these aspects are too fast (e.g., an explosion, eye movements), too slow (e.g., transformations in a living organism), too big (e.g., stellar configurations), too small (e.g., microscopic organisms), too similar (e.g., colour of vegetation), too far away (e.g., planets) for the human eye to discern, or they are hidden (e.g., organs of a living body) or inaccessible unless destructive course of action is taken (e.g., the dissection of an organism, the creation of a cross section of an object, the excavation of remains). Furthermore, physical objects or phenomena may not have visual characteristics as such and still be translated from a non-visible state (e.g., sound waves, thermal radiation) into visual representations using special devices.

Representational practices in science often do not seek merely to "reproduce" visual or non-visual phenomena, but also to provide visual data representations (e.g., charts) of aspects of these phenomena based on measurements of some kind (length, weight, thickness, resistance, quantity, temperature, verbal responses, etc.). In the latter cases, "data" are derived from or constructed on the basis of an observed reality and subsequently represented in a visual form that allows one to discern changes or see relationships more clearly. While the resulting representations are based upon empirical observations or interrogations in the field, they are not "reflections" of visual natural phenomena.

The referent of a representation may be even more immaterial and abstract in nature. Representations that primarily seek to visualize relations between observed phenomena, visualize hypothetical re-

lationships, postulated phenomena or effects, and even purely abstract concepts. The referent of such representations may become an almost purely mental construct that has no "pre-existence" in the physical, historical world whatsoever. Nonetheless, representations of these kinds of referents may play an important role in understanding or influencing that world.

3. Representational Production Processes: Social, Technological and Cultural Aspects

3.1. Inscription, Transcription, Invention and Fabrication

Every "representational" process involves a translation or conversion of some kind; a process of inscription, transcription, and/or fabrication whereby the initial source (phenomenon, concept) is captured, transformed, or even (re-)created through a chain of decisions that involves several actors (scientists, artists, technicians), techno-logical devices, and normative settings. This complex process of meaning-making has an important impact on what and how it can be known, on what is revealed or obscured, and on what is included or excluded.

3.2. Analyzing the Social and Cultural Setting: Division of Human Labour and Different Normative Contexts

The division and standardization of labour, technological constraints, professional ethics, time pressures, as well as economic factors, all play a significant role in their creation, look, and value. Sociologists of science, on the other hand, have studied the complex interactions in a laboratory setting where science is being "produced"[2], an approach that yields insight into how an object of inquiry is selected, delineated, and "prepared" to fulfill its role and thus turned into a

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[2] Bruno Latour and Steven Woolgar, *Laboratory Life: The Social Construction of Scientific Facts*, London: Sage, 1979; Michael Lynch, *Art and Artifact in Laboratory Science: A Study of Shop Work and Shop Talk in a Research Laboratory*, London: Routledge & Kegan Paul, 1985.

"docile object"[3]. Similar processes are at work when scientists make observations in the "field". Furthermore, issues of research funding, academic recognition, peer relations, and societal trends, must all be taken into account if one endeavours to reveal and explain the processes that lie at the heart of particular visual representations of facts or ideas. They likewise may influence what is selected and how it is selected, and the way in which it is processed.

3.3. The Varied Nature of Visual and Non-Visual Transcription

There is a fairly significant, though not exclusive or unconditional, relation between the nature of the referent and the processes through which a representation is or ought to be produced.

Obviously, conceptual constructions that have no material, let alone visual, substance cannot be recorded automatically or according to standardized and repeatable processes (e.g., mental images cannot be photographed or scanned electronically). Objects or phenomena that are visible to the human eye through direct observation, on the other hand, can be captured by representational devices such as a photographic camera that will produce detailed representations characterized by uniform time and continuous space.

However, directly observable phenomena also can be represented through more manual techniques, using simpler media, such as pencils and brushes, which require a more intentional series of acts by humans. These techniques produce imagery that do not have a uniform time and that are not bound by continuous space or a uniform use of scale.

A much more complex translation process occurs when the referent is visual and physical in nature (though often hidden from direct observation), while the intermediate steps are not based on reflected visible light waves. This is the case, for example, when ultrasound scans or X-rays are used. These translations, while equally "in-

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[3] Michael Lynch, "Discipline and the Material Form of Images: An Analysis of Scientific Visibility", *Social Studies of Science*, vol. 15, no. 1 (1985), pp. 37–66.

dexical" in nature, typically require a more cumbersome process of decoding and calibration.[4]

If the translation process is not visual or if the referent is inaccessible or invisible to the unaided human eye, one has to be particularly aware of the possibility that one may be looking at artifacts of the instrumentation, which are "objects" and effects that are generated by the representational processes themselves and that do not refer to anything in the "outside world" or at least not to the phenomenon that is under scrutiny. In many data-generating processes, it is not always easy to differentiate "noise" from "data".

In a similar way, scientists should be aware of the possibility that important aspects of the referent might not be captured by the instrumentation (e.g., because of an inadequate resolution or insensitivity caused by a limited spectral range) or might mistakenly be weeded out as noise. Instruments, in addition to capturing or recording data, invariably both reduce (or lose) data and tend to mold (and add) data in a particular way.

3.4. Algorithmic versus Non-Algorithmic Processes

Technically sophisticated instruments that produce representations or images in a highly automated and standardized way (algorithmic devices, such as cameras and scanning devices) are generally thought of as the most suitable for scientific purposes, as they produce coherent, reliable, and repeatable representations with a predetermined level of detail. Moreover, they tend not to rely too much on personal judgment or skills in the process of image generation, unlike manual techniques such as drawing (though the interpretation of such representations may still require a lot of personal judgment and experience!).

However, in some cases more intentional or non-algorithmic processes and products may be far more convenient. This is true, for

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[4] See for example: Bernike Pasveer, *Shadows of Knowledge. Making a Representing Practice in Medicine: X-Ray Pictures and Pulmonary Tuberculosis, 1895–1930*. Dissertation. University of Amsterdam, 1994.

instance, if the depiction is too detailed for the intended purpose. Furthermore, intentional processes allow a much swifter combination of different types of signs (iconic, indexical, and symbolic) and levels of signification. A third important consideration is that intentional processes may provide a much needed synthesis of features rather than a simple transcript of a particular (snapshot-like) instance of a phenomenon.

4. The Visual Product: The Impact of Medium and Execution/Style

4.1. Cultural Impact on Style and Use of Media

Visualization obviously results in a product that can be "seen": a graphic representation, a photograph, a computer rendering. The products of a visualization process emanate the characteristics of the (final) medium or successive operations as well as the features of the particular application or instance: the selections and choices of what and how to depict.

The end medium or medium of presentation has an important impact on the final appearance of a visual representation. Although each medium has a number of preset characteristics, within each medium there is almost always a great variety in the manner in which a particular referent may be represented (mimetically and expressively). This choice and combination of specific formal options could be called the "style of execution". The style of execution is only partly determined by the medium. Variations in style have to do with genre conventions, cultural schemata, scientific traditions, specific circumstances of the production process, skill, preferences, and idiosyncrasies of the maker, as well as the specific purposes the representations need to serve. To complicate matters further, various media and styles may be combined in a particular representation, lending it a highly hybrid character.

4.2. Visual Representational Latitude:
   Coping with Controlled and Uncontrolled Variation
   in the Depicted and the Depiction

Neither intentional nor more automated (algorithmic) visual images can in themselves express in a simple way the variation (in shape, colour, amount, etc.) one may expect to encounter in the real world. Nor can visual depictions fully explain the connections among the particularities of the representation (the variation in the depiction) and what they seek to refer to (the phenomenon and the different forms it can assume in reality).

This multifaceted problem of different types of justified or un-justified variation in scientific representations, combined with both the variation that exists within the species or phenomenon that is de-picted and the variation in the depiction of certain phenomena or ideas, could be coined "visual representational latitude". This latitude will be determined partly by the capacities of the medium applied (e.g., intentional versus algorithmic media) in coping with the varia-tion observed within the depicted phenomenon or process, but more importantly by the manner in which that medium is used, including the stylistic options it offers, the scientifically motivated choices and the various "artistic liberties" that producers allow themselves.

5. Types and Contexts of Use:
   Matters of Encoding and Decoding

5.1. Representational Constraints

Representations cannot serve adequately just any purpose or intent. Various significant relationships exist between the type of referent, the production process, the medium, and the types of uses and claims that can be attached to them. Visual representations must have the necessary "properties" to comply with certain functions or uses. Properties, for that matter, refer not only to the characteristics of the

medium that is employed but also to the broader contexts of both production and use.

Mitchell[5] distinguished between two types of representational "constraints" or, put differently, two factors that both the producer and user will have to take into account when trying to apply visuals successfully in a communication and cognitive process. First, there is what he called "representational commitment", by which he meant that certain techniques are (more) appropriate for recording certain things and less suited or even totally unsuited for recording others: "different medical-imaging techniques – CT, ultrasound, PET, MRI, and so on – are committed to acquiring different types of data about bony and soft tissue diseases and physiological activities, and so are used for different diagnostic purposes". A second requirement that Mitchell puts forward is that a visual representation "must have the correct type of intentional relationship to its subject matter". For example, a scan of a pathogenic heart may serve as a diagnostic tool to help one particular patient, but that is not to say that it is the most appropriate representation for use in a general medical textbook.

5.2. Kinds of Intents and Purposes

The intents and purposes of visual representations in scientific discourses are manifold. For one thing, natural phenomena might be visualized for the purpose of further analysis: to make a diagnosis, to compare, to describe, to preserve for future study, to verify, to explore new territory, to generate new data, etc.

Visual representations not only serve analytical and intermediate purposes, but they are also often used to summarize or synthesize empirical findings or a theoretical line of thought. Thus, they may provide an overview, display results in their spatial organization or conceptual relations, or clarify the textual or numerical part.

Many visual representations intentionally or inadvertently will embody an implicit or more explicit view on or argument about what

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[5] William J. Mitchell, *The Reconfigured Eye: Visual Truth in the Post-Photographic Era*, Cambridge, MA: The MIT Press, 1992, p. 221

is being presented visually, through the many elements and choices that make up the representation. This expressive function of scientific visualizations need not be a problem as long as it is duly acknowledged and, if required, explained.

Preferably, a predetermined purpose should guide the production process. However, a particular visual representation that was made for a specific purpose may be suitable for other purposes, even for some that were not envisioned at the time of production. But in most cases one then needs to know exactly how the images or visual representations came about and what their broader context of production was before one can assess their validity for those other purposes.

6. Developing Visual Scientific Competencies

Scientists should more actively develop a sensitivity for the wide variety of visual representational practices and products and the many ways in which they can be deployed in scientific discourse. A visually competent scholar should be aware of the impact of the social, cultural, and technological aspects involved in the production and handling of representations, as well as the different normative systems that may be at work and how they exert a determining influence on the eventual appearance and the usefulness of representations. This is not just a matter of establishing a clear division of labour and then putting together those various types of expertise, as in fact they need to be merged rather than juxtaposed.

The aspects and issues that have been discussed in this chapter may serve as a theoretical framework for the thoughtful production of visual representations in science or they may be used as a tool to assess critically the appropriateness of different aspects of particular representations. Such a framework may prove useful in examining the complex interdependencies that exist among the nature of the referent, the social, technological and cultural context of production, the choices with respect to medium and style of representation, and the purposes and uses that need to be achieved. Figure 1 summarizes

and, in a limited way, visualizes the elements and arguments of this framework.
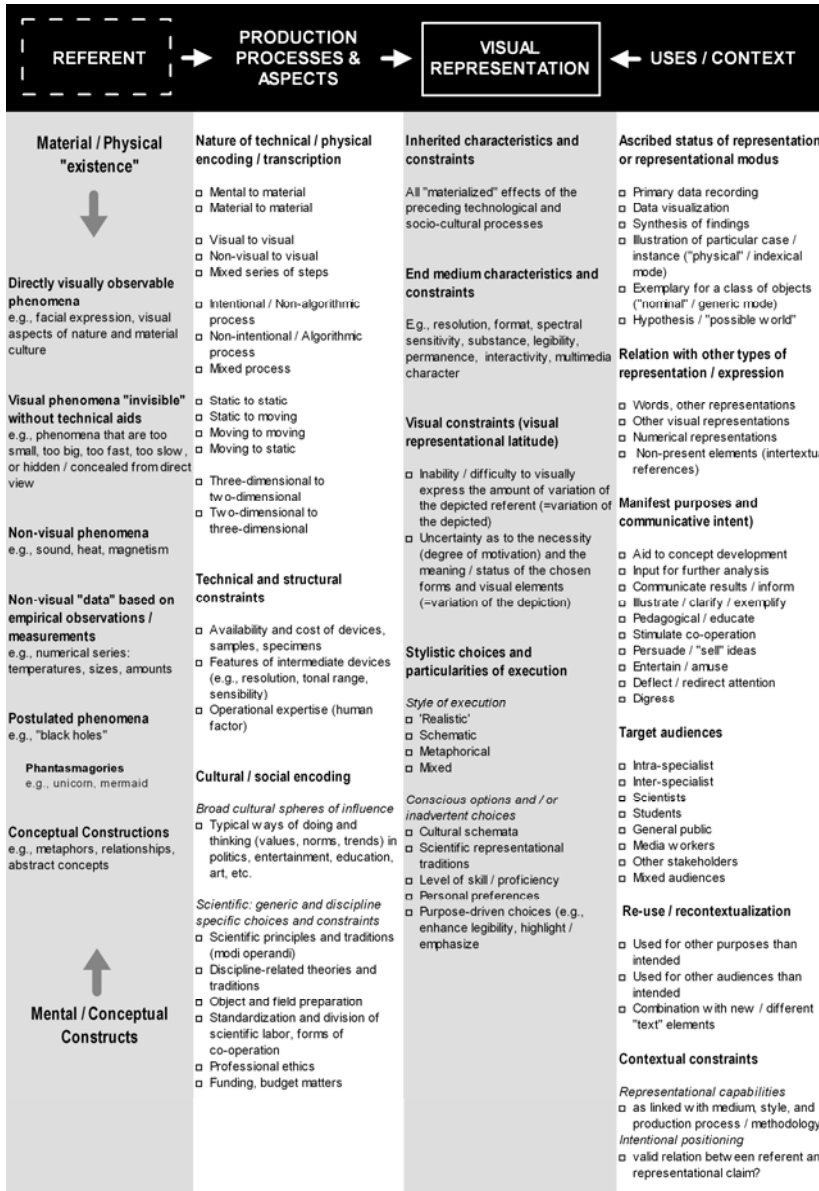
Figure 1: A Conceptual Framework for Assessing and Creating Visual Representations for Scientific Purposes (© Luc Pauwels)

Amirouche Moktefi

Diagrammatic Reasoning:
The End of Scepticism?

1. Introduction

The usage of diagrams in mathematics has long faced scepticism. Since mathematical proofs were held to be formal and diagrams to be informal, there was no room that could be made for the latter within the former. Of course, one regularly meets with various charts and figures in mathematical books and textbooks. However, such diagrams were viewed as mere pedagogical and heuristic devices that one might use with benefit in the context of discovery but that are redundant and unreliable in the context of justification. Still, interest in diagrams has never ceased and recent years have witnessed a growing attention paid to their role in mathematical practice and education.

In a recent work, I identified two main trends that have challenged this scepticism.[1] On the one hand, it has been shown that rigorous formal diagrammatic systems can be designed. Hence, it is possible within this "formal" account to incorporate diagrams without abandoning the ideal of formal proofs. On the other, it has been argued that mathematicians do not construct ideal proofs in their real work but rather offer practical proofs that suffice to convince other mathematicians. Hence, diagrams do not need to be "formalised" to be integrated in "acceptable" proofs. In this "practical" account, diagrams are rather viewed as tools that are manipulated with imagination within specific problem-solving contexts.

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[1] Amirouche Moktefi, "Diagrams as Scientific Instruments", in András Benedek and Ágnes Veszelszki (eds.), *Virtual Reality – Real Visuality*, Frankfurt/M.: Peter Lang, 2017, pp. 81–89

Both "formal" and "practical" accounts are met with in current diagram studies.[2] However, the supporters of these accounts, while agreeing in their opposition to the suspicious view, have also to some extent disapproved each other: the "formal" view is criticised for its lack of naturalness while the "practical" view is suspected of not accounting for mathematical rigor. In this chapter, I consider these objections. I argue that the first objection rests on the needless assumption that diagrammatic reasoning is necessarily reasoning with a (single) diagram. The second objection is answered by adopting epistemological strategies, including the much disputed "derivation-indicator" principle.

2. Imagination and Rules

When we manipulate a diagram (for instance, add a mark to it, rotate it or even just look at it "from a different perspective"), it is common to refer to the outcome of our action as if it was the same diagram that has merely been "transformed" rather than to think of it as an entirely new diagram that has been "derived" from it. This reading differs in algebraic proofs that are organized in a sequence, so that a new formula is derived from (and written after) previous formulas:

> Some picture proofs, Euler and Venn diagrams, and Euclidean diagrammatic demonstrations are intra-configurational insofar as the reasoning "stays within the diagram". It is by looking at the drawn diagram in different ways, sometimes in an ordered series of steps, that one sees that what the diagram shows is so. Reasoning in the notation of arithmetic and algebra (and in knot theory) is instead trans-configurational insofar as the steps of reasoning in these systems require new writing.[3]

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[2] See Peter Chapman et al. (eds.), *Diagrammatic Representation and Inference*, Berlin: Springer, 2018.

[3] Danielle Macbeth, "Seeing How It Goes: Paper-and-Pencil Reasoning in Mathematical Practice", *Philosophia Mathematica* 20 (2012), pp. 58–85, the quoted passage on p. 64.

Hence, it seems at first unnatural to think of diagrams as objects *on* which we work by making derivations in accordance with rules. Hence "formalists" may be said to force diagrams into a framework to which they do not "naturally" belong.[4] Yet, it is easy to think of instances where images are found in series or sequences. Kristóf Nyíri, in his discussion of "moving images", observed that:

> [S]ingle static images can plausibly conjure up a scene, or correctly depict a given view, but they trivially cannot convey what the state of affairs is they show; they cannot convey statements. … The picture of course becomes unequivocal once it is complemented by a caption. But it can be disambiguated also by making it into an item in a series of pictures – a series can tell the story a single image cannot.[5]

Nyíri provides the example of comics which are presented as sequences of images, combined with speech bubbles, and reminds us that such conventions are easily understood even by very young children.[6] One can also think of instances where the manipulation of an image produces a series of sub-images that might be externally drawn or remain in the user's mind. For instance, it is common to fold a tourist map to focus on a specific region of interest, thus, producing a sub-map. Similarly, we may search for a specific route of transportation and, hence, dismiss the irrelevant portions of a map. As such, we produce a mental image of a sub-map without even folding the actual map.

Similar sequences of diagrams are found in mathematics. Indeed, many of the examples in the *Proofs without Words* series are

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[4] Valeria Giardino, "A Practice-Based Approach to Diagrams", in Amirouche Moktefi and Sun-Joo Shin (eds.), *Visual Reasoning with Diagrams*, Basel: Birkhäuser, 2013, pp. 135–151.
[5] Kristóf Nyíri, *Pictorial Truth: Essays on Wittgenstein, Realism, and Conservatism*, Dunabogdány: 2017, the quoted passage on p. 109.
[6] *Ibid*.

made of such sequences.[7] Silvia De Toffoli and Valeria Giardino provide a good instance in their work on knot theory. Indeed, the knots are manipulated by transforming the diagram of a knot through a series of moves that produce a new diagram. Hence, an effective manipulation requires "a form of manipulative imagination that gets enhanced through training by transposing our manipulative capacities from concrete objects to this notation". In this case, "diagrams become tools for and objects of 'experiment', on which experts perform epistemic actions, which correspond to inferential steps in an argument"[8]. Hence, it is not uncharacteristic to manipulate diagrams in accordance to rules in order to produce a sequence. Naturally, it is not necessarily for the rules to be explicitly stated by their user when manipulating a diagram. Yet, a diagram that is offered for a specific context "includes its rules of use, not just pictures on the page"[9].

Moreover, the so-called naturalness of "single" diagrams itself can be disputed. Euler diagrams, for instance, are commonly praised for their high iconicity and naturalness.[10] However, a look at their historical genesis and semiotic properties shows that they are constructed to solve specific problems and hence fail to work satisfactorily in other instances.[11] Hence, one must keep in mind that diagrams are constructed in such a way as to fulfil a function. That diagrams ought to be seen as constructions is also suggested by recent debates on imagination in mathematics.

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[7] Roger B. Nelsen, *Proofs without Words*, Washington, DC: Mathematical Association of America, vol. 1, 1993; vol. 2, 2000; vol. 3, 2015.

[8] Silvia De Toffoli and Valeria Giardino, "Forms and Roles of Diagrams in Knot Theory", *Erkenntnis* 79 (2014), pp. 829–842, the quoted passages on pp. 839 and 840.

[9] Catherine Legg, "What is a Logical Diagram?", in Moktefi and Shin (eds.), *op. cit.*, pp. 1–18, the quoted passage on p. 14.

[10] Amirouche Moktefi, "Is Euler's Circle a Symbol or an Icon?", *Sign Systems Studies* 43 (2015), pp. 597–615.

[11] For example, Euler diagrams are less effective with intensional interpretations. See: Gem Stapleton et al., "Euler Diagrams through the Looking Glass: From Extent to Intent", in Chapman et al. (eds.), *op. cit.*, pp. 365–381.

It has indeed been argued that imagination is bound in that it does not account for mathematical impossibilities. It is, for instance, said that one cannot imagine a round square, since whatever is imagined cannot be round and square at once.[12] However, it is unclear why the possibility of imagination would depend on the correctness of the imagined object. On the contrary, it is precisely the merit of imagination to produce new objects that come to mind when instructed to imagine a "round square", irrelevantly of whether such objects are round or square. Hugh MacColl rightly observed that:

> We have all seen and drawn triangles; but a "round square" is at present meaningless. In the course of the future evolution of English, our descendants may some day apply the term to some reality, and then it will cease to be unreal; just as a *horseman* does not now mean an unreal combination of *horse* and *man*, like a centaur, but a real man riding on a real horse.[13]

Moreover, we argue that it actually is possible to imagine (and visualize) an object that would truly be both a round and a square. For the purpose, it is not necessary for this picture to be round and square itself. It suffices that the pictured "round square" stands in relation to round-ness and square-ness the same way the object itself relates to them. For instance, one may simply draw an Euler (or Venn) diagram formed by two intersecting spaces. The first space would stand for round-ness and would, hence, gather all round objects. The second space would stand for square-ness and, hence, would gather all square objects. Consequently, the intersection will contain objects that are both round and squares. It suffices to mark the intersecting space, for instance with a dot, to denote a "round square" as requested.[14] Of course such a diagram might not be the "mental image"

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[12] Jean-Yves Béziau, "Possibility, Imagination and Conception", *Princípios* 23 (2016), pp. 59–95.

[13] Hugh MacColl, "Symbolic Logic (A Reply)", *Mind* 16 (1907), pp. 470–473, the quoted passage on p. 471.

[14] In an Euler diagram, the dot stands for the individual itself (the round square). In a Venn diagram, the dot rather indicates the existence of the individual. Recent

that some readers would have expected, but that would be because they imposed on their "images" unnecessary demands. For instance, the organigram of an organization does not require the nodes (that could be boxes) to physically resemble the people they stand for. All that is needed is for the nodes to be interconnected in such a way as to exhibit the relations underlying the structure of the organization.[15]

3. Proofs and Derivations

The role of ambiguity in mathematical discovery was praised in recent literature.[16] For instance, in knot theory, the indetermination of the graphs makes several moves possible and hence triggers a manipulative imagination whose effectiveness increases with training and expertise.[17] However, this productive ambiguity also faced criticism on the ground that "[t]here are plenty of cases where mathematicians have gone astray when using intuitively plausible but ultimately misleading lines of reasoning that trade on ambiguity, vagueness, or other problematic characteristics". Hence, "in the context of justification, a properly developed theory must satisfy requirements of rigor more stringent than those in play in the context of discovery"[18].

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diagrammatic systems, such as spider diagrams, are more expressive for the representation of individuals. See: Amirouche Moktefi and Ahti-Veikko Pietarinen, "On the Diagrammatic Representation of Existential Statements with Venn Diagrams", *Journal of Logic, Language and Information* 24 (2015), pp. 361–374.

[15] On the diagrammatic display of relations and its contribution to the fruitfulness of diagrams, see: Jessica Carter, "Exploring the Fruitfulness of Diagrams in Mathematics", *Synthese* 2018, forthcoming. Accessible at: https://doi.org/10.1007/s 11229-017-1635-1.

[16] Emily R. Grosholz, *Representation and Productive Ambiguity in Mathematics and the Sciences,* Oxford: Oxford University Press, 2007; William Byers, *How Mathematicians Think: Using Ambiguity, Contradiction, and Paradox to Create Mathematics*, Princeton: Princeton University Press, 2007.

[17] De Toffoli and Giardino, *op. cit.*, p. 839.

[18] Doug Jesseph, "Review of Emily R. Grosholz's *Representation and Productive Ambiguity in Mathematics and the Sciences*", *Notre Dame Philosophical Reviews*,

In a recent work, I alluded to the epistemological strategies that are used by scientists to reduce the uncertainties that are inherent to their experimental activities.[19] Allan Franklin identified a set of such strategies and argued that it "provides reasonable belief in the validity of an experimental result. These strategies distinguish between a valid observation or measurement and an artefact created by the experimental apparatus."[20] I argued that such strategies are found among mathematicians as well, in particular when it comes to manipulating diagrams. For instance, diagrams may be "calibrated" to test their trustworthiness and the absence of undesired features. Also, the strategy of inter-instrumentality (i.e. the use of different instruments to assess the robustness of experimental results) is found when mathematicians use different instruments (diagrams, algebraic notations, computers, etc.) to re-calculate a result or re-prove a theorem. From this "practical" standpoint, diagrams contribute to the robustness of mathematical proofs without the need to produce formal diagrammatic systems.

Such strategies might not convince a reader whose idea of proof mainly consists in a linear derivation which is "a finite sequence of formulae such that every term of this sequence is either an axiom or is obtained from a set of earlier terms of this sequence by applying one of the inference rules"[21]. To convince such a "formal" reader of the correctness of an informal proof, one may need to indicate an underlying derivation. Such a "derivation-indicator view" of mathematical proofs was advocated by Jody Azzouni:

2008, https://ndpr.nd.edu/news/representation-and-productive-ambiguity-in-mathematics-and-the-sciences.

[19] Moktefi, "Diagrams as Scientific Instruments".

[20] Allan Franklin, *Experiment, Right or Wrong*, Cambridge: Cambridge University Press, 1990, the quoted passage on pp. 103–104.

[21] Andrzej Pelc, "Why Do We Believe Theorems?", *Philosophia Mathematica* 17 (2009), pp. 84–94, the quoted passage on p. 85. In the philosophy of mathematics literature, proofs and derivations are sometimes used as equivalent to informal and formal proofs respectively. See: Fenner Tanswell, "A Problem with the Dependence of Informal Proofs on Formal Proofs", *Principia Mathematica* 23 (2015), pp. 295–310.

> Ordinary mathematical proofs indicate (one or another) mechanically checkable derivation of theorems from the assumptions those ordinary mathematical proofs presuppose. The indicator view explains why mathematicians agree so readily on results established by proofs in ordinary language that are (palpably) not mechanically checkable.[22]

This view has been thoroughly discussed and criticised on several grounds in recent philosophy of mathematics.[23] It has notably been objected that "not only do mathematical proofs contain ingredients that cannot be captured by formal calculi but, in fact, no link between those proofs and the hypothetical derivations underlying them can be established in the case of many theorems"[24].

The rejection of the "derivation-indicator view" as a general principle to account for mathematical proofs does not prevent its adoption as an epistemological strategy. Indeed, in many proofs, it is possible to indicate underlying derivations. This is specifically workable in the case of simple proofs and in proofs which are offered as sketches or shortcuts of other proofs that contain gaps. It might be argued, as Lewis Carroll's famous "Tortoise" did, that an infinite number of steps are needed to ensure that the gap is filled.[25] However, it must be reminded that it is not necessary for the derivations to be actually exhibited in order to increase confidence in the proofs. All that is needed is to convince the reader that such derivations could be, if needed, exhibited. Hence, even when one attempts to fill the mathematical gaps, one does not need to fill them until no gap is left. One rather has to fill the gaps until acceptance of the new proof

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[22] Jody Azzouni, "The Derivation-Indicator View of Mathematical Practice", *Philosophia Mathematica* 12 (2004), pp. 81–105, the quoted passage on p. 105.

[23] See: Brendan Larvor, "Why the Naïve Derivation Recipe Model Cannot Explain How Mathematicians' Proofs Secure Mathematical Knowledge", *Philosophia Mathematica* 24 (2016), pp. 401–404.

[24] Pelc, *op. cit.,* the quoted passage on p. 85.

[25] Amirouche Moktefi and Francine Abeles, "The Making of 'What the Tortoise said to Achilles': Lewis Carroll's Logical Investigations toward a Workable Theory of Hypotheticals", *The Carrollian* 28 (2016), pp. 14–47.

is obtained. At that stage, the proof might still contain gaps but they need to be considered as acceptable by its reader.[26]

Naturally, derivations also require imagination for the determination and application of the rules of inference. Hence, they are to some extent subject to the same objections as manipulative imagination. Not only can the rules themselves be flawed but their execution also can contain erroneous steps. Even when the derivations are fully surveyable and mechanically-checkable, risk of error is not completely excluded. Yet, the aim of the strategy is merely to convince the sceptical reader that the proof can "indicate" a derivation, and hence, that the informal proof need not be less trustworthy than the indicated derivations. The length of such derivations depends on the agent. If proofs: (1) fail to reach an acceptable level of derivation, or (2) reach acceptance but their length prevents "gain of confidence", then the "derivation-indicator" strategy may be declared inefficient and one should then attempt other epistemological strategies. Yet, in many cases, the "derivation-indicator" strategy is workable.

This strategy naturally can be used for both diagrammatic and non-diagrammatic proofs. To convince of the correctness of a diagrammatic proof, one might simply indicate an underlying derivation (whether diagrammatic or not). Azzouni has already observed that it is not needed for the diagrammatic proofs to be "transported" into a language-based system, insofar as they indicate a mechanical checkability.[27] For instance, if one fails to "see" the conclusion of a given syllogism on a three-term Venn diagram, one might simply be offered inference rules to "extract" the conclusion from that diagram into a "derivative" two-term diagram which exhibits the isolated conclusion. Such a procedure is, for instance, found in Carroll's *Game of*

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[26] Line Edslev Andersen, "Acceptable Gaps in Mathematical Proofs", *Synthese* 2018, forthcoming. Accessible at: https://doi.org/10.1007/s11229-018-1778-8.
[27] Jody Azzouni, "The Relationship of Derivations in Artificial Languages to Ordinary Rigorous Mathematical Proof", *Philosophia Mathematica* 21 (2013), pp. 247–254.

Logic where all syllogisms are solved with a board containing two diagrams on which propositions are represented with counters.[28]

4. Conclusion

Recent developments in diagram studies challenge some common misconceptions that die hard. There is growing interest in diagrams as tools for discovery, proof and understanding in mathematics. Current work in the field demonstrates the variety of diagrammatic proving practices. It is hoped and expected that future research will explore further the intricate questions that one faces on the way toward an epistemology of diagrammatic reasoning.[29]

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[28] Amirouche Moktefi, "Beyond Syllogisms: Carroll's (Marked) Quadriliteral Diagram", in Moktefi and Shin (eds.), *op. cit.*, pp. 55–71.
[29] This research benefited from the support of ERC project "Abduction in the age of uncertainty" (PUT 1305, Principal Investigator: Prof. Ahti-Veikko Pietarinen).

REVOLUTION ONLINE

James E. Katz

The Visual Turn in Mobile Communication: Notes about Travel Experiences

1. Introduction

Considering the arc of their technological development, it may be seen that mobile communication devices are increasingly devoted to acquiring, processing, and interpreting visual data. One result of this trajectory is that the touristical experience has changed dramatically both in terms of behavioural routines and interpersonal connectivity. Although commemoration of the travel experience, and making available "the distant" to those in the present-nearby, is a practice of long-standing, mobile technology has democratized and accelerated the practice with the effect of transforming the touristical setting and the traditional "touristical gaze". New norms have arisen to address the proliferation of mobile-based visual technology in the touristical experience. One of these is the placing of the self and the group within the experiential space and touristical frame, most typically characterized as the pullulating selfie. Yet despite its quotidian nature, the process of selfie production provides a rewarding entryway to analyzing the human psyche and structures of social organization. Drawing on a variety of sources including historical data and surveys from the U.S. and Chile we can examine social media, selfies, and the touristical experience. We also address a few remarks concerning futuristic augmented reality and travel.

It's worth mentioning that the representation of the self has been an important component of the touristic experience. As modern as the selfie may seem, and as innovative and captivating as its creation, curation and sharing process is, the impulse behind it is one of

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long-standing. People have been exhibiting behaviours that suggest a longing, or at least a potential, for certain practices which had been nascent but unacted upon for lack of affordances and systems of production.

2. Picture This

A brief glance at the history of trophy hunting and artifact collecting shows the importance of bringing back tokens or representations of places visited or treks undertaken. Before the invention of the easily portable camera, the idea of visually associating the self with a distant place, now something readily achieved with the smart phone selfie, was something that could only be achieved by the wealthy. A revealing example of this may be found in the practice of wealthy Englishmen who traveled to Italy in the 1700s. Pannini, Canaletto and Bellotto and other eminent artists of the day sought to meet the needs of these visitors for painted "postcards" depicting the Italian environs, with depictions of their English patrons painted into the canvas on demand. These artists' studios would have ready-made oil paintings of (say) Rome, including various famous landmarks, and the artisan would only need to paint in the figure of the patron upon purchase. The patron and the painting would return to England where the latter would be displayed for the admiration of friends of the former.

An example of this process is shown in Figure 1, a photograph I took of a painting displayed at the Boston Museum of Fine Arts. I have superimposed a yellow arrow to highlight the patron's image addition on the canvas. In essence, then, the creation of these paintings could be construed as the functional equivalent of that era's selfie (for the cultivated rich).

Travelers of the more quotidian category would have to wait for technological changes in mobile phones/cameras before they could create for themselves a *mise-en-scène* that features themselves in famous places. But in the interim ordinary tourists could avail themselves of the picture postcard, also a derivation of image capture

Figure 1

and reproduction technologies. Postcards, a simple, effective way for tourists to project exotic sites to others, was a popular means of visual communication in the 19th century as both printing technologies

Figure 2

Figure 3

and mail systems improved in speed and capability. Although themes vary widely, a persistent element in many was to show the glamorous and beautiful aspects of particular locales, for instance Budapest, as shown in Figure 2. As may be seen in Figure 3, what might be called

the imaginary self could be projected into the scene, as depicted by the small anonymous figures in the postcard. By only showing the backs of the people engaged in the "touristical gaze", both the purchase and recipient of the postcard could readily project the sender's persona into the Parisian scene. Needless to say, unlike the Venetian and Roman oil paintings, the technologies of postcard production did not permit an expensive customization such as the inclusion of the traveler in the postcard's depiction. This amenity would have to wait until the selfie-capable cell phone, various apps and standards, and electronic networks of distribution could be developed. (Combining both the cell phone and postcard, an app called "Touch Note" will print a cell phone photo on postcard stock, add one's own personal message, and mail the customized, photo-bearing postcard to a chosen recipient.)

The first real camera phone was produced by the Japanese company Sharp in November 2000. To my mind, this melding of the camera and the mobile phone was brilliant, and represented the conceptual boundary-crossing leap that is both rare and in this case utterly transformative on a global scale. That this non-obvious marriage of the cell phone and a camera revolutionized possibilities, became manifest in 2003 when Ericsson introduced the Z1010 first mobile device with a front-facing camera. It was a turning point (pun intend-

Figure 4

ed) in the tourism phenomenon experientially, relationally and economically. Untold billions of selfies are taken every year, and they have changed the character of tourism and the experience of visiting a touristic site. For example, in 2018 when I visited Budapest for the conference that has resulted in this book, I noticed that a patron (presumably a tourist) who was visiting an ostensibly typical Hungarian restaurant had turned his back on a serenading musician to take a selfie of himself in the setting of the restaurant and the musician. Obviously, this behavioural routine would not have occurred were it not for the camera phone *and* the cultural significance of taking a selfie to be enjoyed and shared a later time (see Figure 4).

Figure 5

Figure 6

There have been various responses, including the shutting off of areas that have led tourists take dangerous selfies (due to the fact that the realities of such dangers have been realized in the form of loss of life). Another – and more positive – response, for example in the city of Budapest: touristic offices have even created "official selfie-spots" designed to attract selfie-takers. One such setting is shown in Figures 5 and 6. Yet another response has been to set up selfie-taking kiosks by tourist authorities or companies to promote their brand. This may be seen in Figure 7. Visiting Peru as a tourist, I used a selfie kiosk at the airport to commemorate my visit using the kiosk-provided synthetic images of Machu Picchu and a llama as a

backdrop for added atmosphere. Once created, the kiosk's sponsor, the Korean technology company LG, provided me with free email distribution of that image.

Figure 7

We might ask why selfies have become such an international phenomenon. Space limitations preclude a detailed answer, but to me it seems that there are three elements that combine to produce such a successful innovation. The first is the human brain. Our brains have been invested heavily in optical data collection, processing and interpretation. Due to evolutionary shaping, we devote a lot of brain capacity to handling visual information. "In the brain itself, neurons devoted to visual processing number in the hundreds of millions and take up about 30 percent of the cortex, as compared with 8 percent for touch and just 3 percent for hearing".[1]

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[1] Denise Grady, "The Vision Thing: Mainly in the Brain", *Discover Magazine*, June 1, 1993, see http://discovermagazine.com/1993/jun/thevisionthingma227.

3. Sentimental Journey

Moving from the psychophysical and cognitive processing dimensions of the visual, we can consider what might be termed the sociological dimension. Here we would be interested in opinions, motives, behaviours and social consequences. In this chapter, we will interrogate the role of selfies from a rather narrow viewpoint, namely surveys. First, we will discuss a poll of Boston University college students who were taking communication courses in January 2017. Though of course we can make no representations of generalizability concerning our data, their responses must nonetheless represent to some degree the viewpoint of college students in the current era.

As part of our study, we interviewed a total of 334 students who were mostly freshman or sophomores (18–20 years old). One of our aims was to understand the role of the mobile phone in taking photos. Here, not surprisingly, 95% of respondents either agreed or strongly agreed with the statement, "Most of the photos I take are with my mobile device." Another of our aims was to understand the role of images and social media in the holiday and touristical experience. Just in terms of vacation destination choices, our survey showed that nearly 30% report that their vacation choices were influenced by other people's social media materials.

In terms of behaviour once students are on vacation, about half report that they frequently exchange selfies with someone else while on vacation. Only slightly less, 41%, agreed or strongly agreed that they "always share selfies with a select audience".

Although taking selfies and sharing them with friends is a behaviour that reinforces group solidarity, and sharing selfies more publicly via Instagram or other similar services is a form of self-publicity, the process of making selfies is one that provoked considerable comment from bystanders, much of which is not always favourable. In fact, doing so is often a point of criticism both from an individual viewpoint and that of touristic management. There is a larger dystopian critique of selfies as "the selfie gaze" as part of a

social media pilgrimage.[2] From this vantage point, there has been a flood of criticisms about people not enjoying the touristic experience of what it is but rather as only a means to impress the people back home with the photographic trophies, i.e., selfies and other images of the touristic destinations.

A recent articulate formulation of this view was reported in the *New York Times*, quoting Justin Francis, a so-called sustainable travel executive:

> You can't talk about overtourism without mentioning Instagram and Facebook – I think they're big drivers of this trend. … Seventy-five years ago, tourism was about experience-seeking. Now it's about using photography and social media to build a personal brand. In a sense, for a lot of people, the photos you take on a trip become more important than the experience.[3]

Mr. Francis' commentary is typical of the hostile view of contemporary tourism when compared to a dewy, nostalgic look back at the historical situation. Of course that juxtaposition does not mean he's wrong to decry what is happening. But his comment included here is a nice distillation of much criticism of selfies.

Reaching more broadly, a popular trope in travel publications is that selfies can lead to injury and even death if not carried out properly, and that dangerous selfie spots are to be avoided. Such articles usually include gory evidence detailing what transpired. (Given journalists' level of irony, the accounts may include the point that more people are killed each year taking selfies than from shark

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[2] Michelangelo Magasic, "The 'Selfie Gaze' and 'Social Media Pilgrimage': Two Frames for Conceptualising the Experience of Social Media Using Tourists", in Alessandro Inversini and Roland Schegg (eds.), *Information and Communication Technologies in Tourism 2016*, Cham: Springer, 2016.

[3] Farhad Manjoo, " 'Overtourism' Worries Europe. How Much Did Technology Help Get Us There?", *The New York Times*, Aug. 29, 2018, https://www.nytimes.com/2018/08/29/technology/technology-overtourism-europe.html.

attacks.[4]) The rudeness and misbehaviour of selfie-taking visitors is also a popular trope, not only among anti-tourist groups in various vacation destinations but among other travelers as well.

To investigate this dimension of selfie-taking, we asked students to register their sentiments towards the statement (which was referring to their most recent holiday), "I observed many other tourists taking selfies." Most either agreed or strongly agreed with this statement. (47% agreed and another 36% strongly agreed.) Only 10% were neutral and 8% disagreed (6% disagreed and 2% strongly disagreed.) Thus it seems that not only are many selfies being taken, as previously noted, but that this activity is quite perceptible to co-located tourists.

We asked our respondents about the sentiment, "It is annoying when other people are taking selfies in the places I am visiting." In terms of their responses, we found a large gender difference in terms of agreement with the statement. Specifically, 44% of males agreed or strongly agreed with the statement, compared to 35% of the females, nearly a 10% difference. In terms of a neutral opinion about the statement, slightly more than 25% held that view. In terms of females, about one-fifth disagreed and the same proportion strongly disagreed whereas for males that number was 17% and 11% respectively. Thus, taken as a whole, we find that a substantial minority of the surveyed Boston University students find selfie-taking behaviour in places that are being visited to be annoying, and males find it to be more so then females.

Just as a point of comparison, later in 2017 my colleague Daniel Halpern of the Catholic University of Chile conducted a national panel survey. Among his findings were that slightly more than 40% of the Chilean sample were neutral about the idea that "It is annoying when other people are taking selfies in places I am visiting" and 36% either disagreed or strongly disagreed with that statement. By contrast to the Boston University students, Chileans were much less likely to agree with the statement (40% for the US students versus 22%

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[4] David Cohen, "Selfies, Narcissism and Social Media", *Adweek*, Jan. 6, 2016, https://www.adweek.com/digital/rawhide-selfies-infographic.

for the Chileans). Whether this difference might be due to variations in sampling, cultural differences, or historical experiences is unknown.

Yet another point of comparison draws upon a U.S. nationally representative sample that we contracted for in late spring of 2017. This was a survey about social media use on vacations. Although a detailed analysis of the findings of this survey must await another venue, one small portion may be presented here due to its relevance. Specifically, we asked the respondents to share with us the thoughts that they had at the end of the survey concerning the matters on which they were polled. Below are four examples of the many comments that respondents voluntarily added. They have been chosen to represent the gamut of opinions of our respondents (all of whom coincidently are women), and the reader will note some threads of opinion similar to that of Justin Francis' above.

> "*If I'm on vacation, I want to see the scenery with my eyes and live in the moment. I don't want to see the scenery through a camera lens and live through the pictures.*" – 23 year old woman.

> "*I think people on social media generally enjoy seeing pictures that people take on vacation of far-away places, I know I do if I can't get there myself. Taking selfies is a fun way to show where you are.*" – 53 year old woman.

> "*Vacation is family time for me. No computers or phones or scandalous social media posts can replace that for me. Ever.*" – 22 year old woman.

> "*While we are on vacation I love to keep memories of the trip and everyone is in the photos. So we take a lot of photos.*" – 51 year old woman.

4. Facing the Future

Our penultimate topic looks to the future. In this regard, it's possible to imagine that with the progress of technology in the future

there might be little need to take a selfie. By this cryptic declaration, I am alluding to augmented reality and virtual reality technologies and what their impact might be on touristic travel. One could argue that these technologies will become more realistic and richer, in the sense that they give the user a fully equivalent sense of immersion in the artificial setting, or more colloquially, the effect of "being there". In that case it might be almost academic to distinguish between the physical presence of being at a touristic site and the experience of being there via artificial reality. Though by no means definitive, we thought our national survey respondents might be able to give us some insight. To do so, we gave them a prompt describing what AR and VR might be like. We then asked our respondents if they agreed with the statement "There is no substitute for visiting a place physically." To this only 7% disagreed or strongly disagreed, and were about evenly split between the two choices. 14% were neutral. But nearly 80% agreed including 51% who strongly agreed. This distribution of responses suggests that, at least based upon today's values and understandings of approaching technologies, the travel business has little to fear from immersive and other virtual travel technologies. (The parallel with videoconferencing should not be missed. Although videoconferencing is now free for most internet users, rather than devastating the travel business, more people than ever are traveling further than ever. And much of this travel is to meet with people and discuss things with them, tasks that could be easily done via teleconferencing.)

Why might there be such limited interest in taking a virtual reality/augmented reality (VR/AR) holiday? The qualities and limitations of present-day technology suggest answers. For one thing, the goggles and headsets that are required to generate the user's AR/VR experience restricts many social contacts, that is, it isolates the user. Social contact and sharing is often a strong motivation for vacations. In the U.S. national survey we conducted in 2017, 48% indicated that their most recent vacation included travel with family members. In terms of motives, spending time with people was identified as the most popular factor among survey respondents. Already a complicat-

ing factor in vacations, the inclusion of young children might be particularly problematical in terms of AR/VR vacations.

By way of summary and conclusion, we have argued that we are evolutionarily prepared for visually-based social media generally and selfies in particular at the neurological, cognitive and social levels. There is also a cultural tension between those who conduct their social media/selfie-taking behaviour intrusively and those who co-exist in the same touristic environmental setting. Collective action, constrictive policies and moral suasion are invoked to adjudicate the cross-pressures that stem from these tensions. At a micro-interactional level, there is cross-pressure concerning the relative weight one places on enjoying the moment and/or emerging oneself in the experience versus constructing, commemorating and sharing with non-present others. Our brief analysis of historical patterns and current practices, as well as our projections concerning future behaviour, leads to the conclusion that visual communication is pivotal to the experience of touristical travel specifically and one's relationship to others generally. The creation and sharing of visual messages, such as the selfie, also underscores the way such processes spill over from individual-level concerns and anxieties to activate local interactional and social policy responses. Given the foregoing analysis, it seems that there will be continuing interpersonal and societal-level tensions as people engage in and develop norms concerning the exercise of their understandable fascination with visual communication.

Elke Diedrichsen

On the Semiotic Potential of Internet Memes

1. Introduction

The meaning of linguistic signs is based on conventions of usage.[1] A linguistic sign is a cultural unit, as the sign emerges and is shaped within and through culture.[2] With internet culture, we are experiencing a new dimension of sign usage that comes with its own conditions and possibilities for communication and sign creation. One very popular phenomenon brought about by internet culture is Internet Memes. The term builds on Richard Dawkins' definition of a "meme" as a unit that is the cultural equivalent of a biological gene.[3] An Internet Meme is a visual schema for content that can take multiple forms, and that goes "viral" by being shared rapidly via the world wide web. Memes frequently appear in the form of image macros with a caption text. Each image is associated with a certain topic or mood that can be adapted to individual situations by usage of the text. Internet memes therefore are complex constructions with conventionalised rules for usage. The paper will provide an analysis of the semiotic potential of these image-text combinations in terms of Peirce's notions symbol, icon and index.

2. Peirce's Theory of Semiotics

The semiotic philosophy of Charles Sanders Peirce leads to the distinction of three types of signs that have been discussed in the litera-

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[1] Ludwig Wittgenstein, *Philosophical Investigations*, transl. G. E. M. Anscombe, Oxford: Basil Blackwell, 1953.
[2] Umberto Eco, *A Theory of Semiotics*, Bloomington: Indiana University Press, 1976.
[3] Richard Dawkins, *The Selfish Gene*, Oxford: Oxford University Press, 1976.

ture ever since. The three types of signs are really three means of interpretation.

An indexical sign gains its character as a sign through an existential relation with its object. An index directs the attention to its object. The association established by an indexical sign is one of contiguity. The existential relation is found in indexical signs that signify their objects because they are naturally part of them. For example, smoke is an index for fire. The direction a weather vane points to signifies the wind direction. Any pointing gesture or use of words to that end is indexical, because it fulfils the function of forming a connection towards an object or person, be it in real life or in the pretext. Arrows are therefore considered to be indexical signs, same as indices in a diagram.

An icon is a sign that establishes a connection between the signifier and the signified on the basis of similarity. Images are iconic representations, like diagrams, and metaphors are icons on another level, where the representative character of a representamen is represented by analogy.

A symbol is a sign whose semiotic power is the effect of a law: People agree to use a certain symbol to express a certain meaning. A symbol, which can be a word, a phrase, an image, a gesture, or anything else that people can produce that is perceivable by others, emerges with a convention of usage within a group of users.[4]

3. Signs Found in the Street

The following images give some examples of signs and the combination of indexicality, iconicity and symbolism that they entail. Figure 1 represents the typical use of a pictogram in a traffic sign. The sign is unusual, but will be understood, because the pictorial representation shows significant features of elderly people. Also, there is a written caption with the sign that "translates" the icon. Furthermore, the red triangle is known as a warning sign by convention.

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[4] Charles S. Peirce, *Philosophical Writings of Peirce: With an Introduction by Justus Buchler*, New York: Dover, 1955.

Figure 1: Elderly people. Rostrevor,
Northern Ireland, UK, 25 March 2018.

Figure 2: Weather vane.
Omeath, Ireland, 8 April 2018.

A weather vane as in Figure 2 is an index for the wind direction. It is placed in order to deliver this information, and it has no other function.

Figure 3: Irish Flag. Omeath, Ireland, 8 April 2018.

A flag (Figure 3) has a number of meanings, the most important one of which is that it refers to a country by convention. In Ire-

land, there is a political implication of raising an Irish flag around Easter, as done here, as well. In addition to that, a flag may be used as an index for the wind direction, because of its natural property of being moved by the force of the wind. The indexical function is available when the flag is raised and the wind blows, but it may be completely overlooked, if the viewer is not interested in the wind direction.

4. Memes and Signs

The term „meme" originates from Dawkins, who describes them as the cultural equivalent of biological genes: A meme is a unit of human culture. It is comparable to a gene in that cultural units are passed on to other members of the culture. They may undergo variation, and there is competition among cultural units as some will be passed to the next generation, while others will be forgotten. Dawkin's examples of memes comprise pieces of music, linguistic theories, fashion trends, religious beliefs and ceremonies and the like. They also involve applied knowledge shared among humans, like knowledge about making pots, for example.[5]

The term meme, applied to the idea of cultural knowledge, suggests an interesting approach in itself. I have argued elsewhere that this term is useful for the description of signs in human communication, as it opens up the explanation of the communicative potential of signs beyond the limiting boundary of the concept of a "word", and in fact beyond the realm of mere written forms of linguistic structures. It makes it possible to include intonation, gestures, sign language with all its dimensions, but also contributions of media channels to communication, which is important for the description of internet communication.[6]

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[5] Dawkins, *op. cit*.
[6] Elke Diedrichsen, "Constructions as Memes – Interactional Function as Cultural Convention Beyond the Words", in F. Liedtke and C. Schulze (eds.), *Beyond Words*, Berlin: De Gruyter, 2013, pp. 283–305; Elke Diedrichsen, "From Idioms to Sentence Structures and Beyond: The Theoretical Scope of the Concept 'Con-

5. Internet Memes

The term "meme" has been used for popular content spread via the World Wide Web, which mostly takes the form of pictures with or without text captions. These contributions have probably been called memes because they spread rapidly and invite reactions that generally consist in variations on the meme, where a general topic or mood, including some aspects of the picture, are consistent, whereas other aspects and/or a text caption can be altered.

I view internet meme exchange as a modern form of communicative interaction, where a sender publishes content in order to amuse others and spark reactions, without being able to foresee the extent of the spread and the nature or amount of reactions this content will inspire. Some memes reach worldwide fame in a matter of hours, and they stay popular for years. The site www.knowyour meme.com informs about the lifeline of a meme, and about its peak in popularity.[7]

6. The Semiotic Potential of Internet Memes

We will demonstrate in this section that memes have meaning, and they follow conventions. The meaning generally revolves around content from pop culture, and shared sentiments there, or situations and moods that young teenagers find typical of their situation. These include the fear of social isolation, friendship, relationships, or school and career issues.

The most popular form of memes is composed of a stock image with a caption in bold white capital letters. The caption generally

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struction' ", in B. Nolan and E. Diedrichsen (eds.), *Linking Constructions into Functional Linguistics – The Role of Constructions in Grammars*, Amsterdam: John Benjamins, 2013, pp. 295–330.

[7] Limor Shifman, *Memes in Digital Culture*, Cambridge, MA: The MIT Press, 2014; Elke Diedrichsen, "On the Interaction of Core and Emergent Common Ground in Internet Memes", *Internet Pragmatics,* special issue on the Pragmatics of Internet Memes, Amsterdam: John Benjamins, to appear.

appears both on top and bottom of the image. Generally, the top caption introduces the topic or makes a general remark, while the bottom one resolves the topic with respect to a particular situation. We will go through a few samples of popular and topical memes, and show their semiotic potential in terms of Peirce's categories icon, index and symbol.

6.1. Planking

Planking (Figure 4) is an activity where users lie stiff like a plank in awkward places, get their photograph taken and upload it to social media "just for fun". The fun certainly lies in the absurdity of the place where the 'plank' is performed. Planking is iconic, because it involves the imitation of a visual effect. It is therefore based on similarity and analogy.

Figure 4: Planking, see https://goo.gl/images/LVfBvz.

6.2. Advice Mallard

Actual Advice Mallard (Figure 5) is an image of a male duck giving useful advice for everyday problems of life. There is a related meme called Malicious Advice Mallard (Figure 6), which is a male duck that looks like Actual Advice Mallard but has a red head and red tail
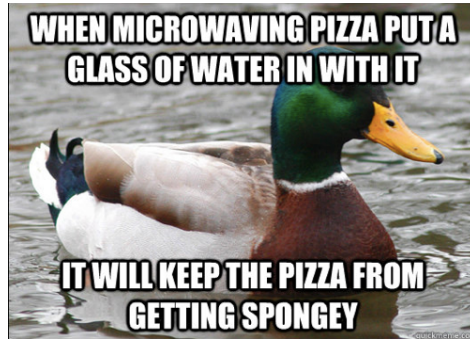
Figure 5: Actual Advice Mallard,
see https://knowyourmeme.com/photos/449119-actual-advice-mallard.

feathers instead of green ones. This duck gives "advice" with mali-cious intent (www.knowyourmeme.com). The distinction between the two ducks demonstrates how conventions emerge and settle in meme usage, and how little variations in form can be commonly associated with large differences in meaning.

The Advice Mallard memes are clearly symbolic, even though they involve pictures. There is no known connection or similarity between the duck and the idea of giving advice. The picture/text combination and the colour coding work entirely on the basis of a convention established within the community of meme users.

Figure 6: Malicious Advice Mallard,
see http://knowyourmeme.com/photos/449182-actual-advice-mallard.

6.3. Scumbag Steve

The meme in Figure 7 shows a young man with a brown cap worn sideways, a golden chain around his neck and an open brown coat with a furry hood, who stands in a doorframe. The text characterizes this person as someone who shows mean, antisocial behaviour in a variety of situations. Like the Advice Mallard memes, Scumbag Steve is symbolic, even though it includes a picture. There is no known connection or similarity between the man, his position, the hat or any other detail in the picture and the idea of "scumbaghood". The picture/text combination works entirely on the basis of convention.

Figure 7: Scumbag Steve iPod stolen,
see https://goo.gl/images/MHkfB5.

6.4. Scumbag Hat

Scumbag Steve appears in variations, some of which alter the composition of the picture in that one element is singled out to carry the "scumbag" semantics to alternative situations. It turns out that the element that is interpreted as the carrier of the "scumbag" semantics is the hat, and it is placed elsewhere, for example on objects, in order to express that these are malfunctioning (Figure 8). The process of

reinterpreting the whole meme in such a way that the hat becomes the main carrier of the "scumbag" semantics is a double metonymic extension: The hat stands for the wearer, and, in terms of the AGENT FOR ACTION metonymy, for the behaviour of the wearer.[8] As there is no existing convention for a brown cap to signify mean behaviour, this metonymic process has evolved through usage. The hat in this meme is an index: It is known as a part of the Scumbag Steve meme, and it points to that meme for reference on the scumbag semantics.

Figure 8: Scumbag Printer, see https://goo.gl/images/eB683t.

6.5. Arthur's Fist

Figure 9 shows a screenshot from the children's television series called "Arthur", in which the protagonist animated character clenches his right fist, while wearing a yellow sweater and blue trousers. In the meme, this image appears with captions that describe situations in which the user suppresses disappointment or other negative emotions. A clenched fist is a known indicator of suppressed emotions. It is an indexical sign.

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[8] F. J. Ruiz de Mendoza Ibáñez and A. Galera Masegosa, *Cognitive Modeling: A Linguistic Perspective*, Amsterdam: John Benjamins, 2014.
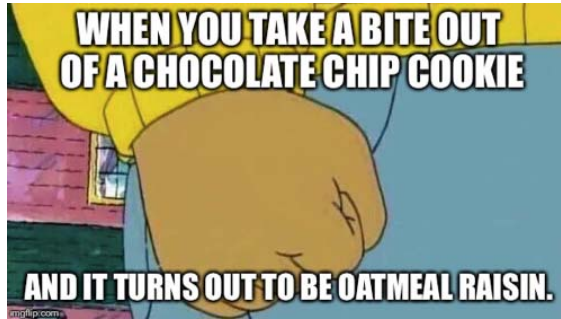
Figure 9: Arthur's Fist Oatmeal Raisin,
see https://imgflip.com/i/1l0bde.

Variations of this meme not only involve statements on disappointing situations in the world that one might suffer, but also changes in the mode of image representation in the image itself. In these variations, the image known from the animated TV series undergoes abstraction, which is a formal cognitive operation.[9]

The abstraction seen here involves an iconic mapping of the image to different modes of representation, including, for example the layout of the scene in Lego bricks (Figure 10) or the deconstruction of the image into minimalist colourful dots (Figure 11).
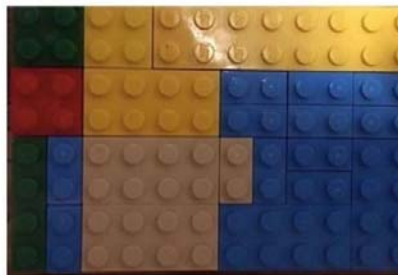
Figure 10: Arthur's Fist lego, see
https://knowyourmeme.com/photos/1231691-arthurs-fist.

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[9] *Ibid.*

Figure 11: Arthur's Fist minimalism,
see https://knowyourmeme.com/photos/1154910-arthurs-fist.

6.6. Three Billboards

The 2017 drama film *Three Billboards Outside Ebbing, Missouri* by Martin McDonagh portrays the struggles of a mother who mourns the rape and murder of her daughter, and who rages against the police force for not finding the culprit. She rents three billboards outside her hometown and puts the following sentences on red ground (Figure 12):

a) Billboard (1): *RAPED WHILE DYING*
b) Billboard (2): *AND STILL NO ARRESTS?*
c) Billboard (3): *HOW COME, CHIEF WILLOUGHBY?*

Figure 12: Still from Three Billboards Outside Ebbing, Missouri*, see*
https://knowyourmeme.com/memes/three-billboards.

The intention of the three-billboard set is to accuse and publicly shame the sheriff for not making sufficient progress in resolving and avenging the crime.

Figure 13 shows three billboards put up in front of Senator Marco Rubio's office in Miami, Florida. They are addressing the shooting with young victims at Marjory Stoneman Douglas High School. The activist group who put up the billboards demand gun control as a consequence of the crime. Like in the original three billboards from the movie, the billboards form a sequence in which an intolerable situation is addressed first, then the desired consequence is asked for in the form of a rhetorical yes/no question, and the last billboard addresses the person by name that is believed to be responsible for the lack of consequence. The billboards read as follows:

a) Billboard (1): *SLAUGHTERED IN SCHOOL*
b) Billboard (2): *AND STILL NO GUN CONTROL?*
c) Billboard (3): *HOW COME, MARCO RUBIO?*

Figure 13: Three billboards demanding gun control,
see https://goo.gl/images/HdqYif.

Three-Billboard inspired memes are iconic, as they mimic the visual scenery with the three red billboards known from the movie. They also mimic the speech acts found on each of the billboards, in order to achieve the communicative effect of slowly building up an accusation and publicly shaming a person for lack of acting up to their responsibility in a situation of grievance.

The Three-Billboard meme is also symbolic in that the speech acts used are well known conventions for speakers of English. The meme is, furthermore, also indexical. The instantiation of the meme with its imagery and its language imitates the movie reference and at the same time acts as a pointer to the movie. Without the popularity and mainstream fame of the movie, or at least the three billboards and their language, the meme would miss the strong communicative effect that it has.

7. Conclusion

Internet memes are signs in participatory discourse on the internet. They are an example of emergent sign use. I have argued that an interplay of Peirce's three sign types, in terms of three modes of interpretation, can be extracted from popular memes. They are the clues that help users interpret and understand the memes, and they also lead the users in the creation of new, related memes. The symbolic function applies to memes that have a convention of usage already or that involve parts that are known from otherwise conventionally shared use of language or images. Memes often have iconic parts in that their form or content mimics form or content known to users. Also, playful use of memes may lead to variations on the representational level, where the mode of representation is altered for an otherwise identical image. Memes also have indexical parts, in that a detail of the meme composition can act as a pointer to another meme or to content known from other sources. Memes are popular because they provide an easy and fast-paced manner of publishing small content that reaches great resonance world wide, because it points to matters of topical popular interest, or to sentiments and life experiences shared by a great number of young people.

Ágnes Veszelszki

Do Online Motivational Messages Tell a Visual Story?

1. Introduction

Motivational (or: inspirational) messages combining images and texts represent a significant portion of content shared on Facebook, the social networking website which reached two billion users in June 2017. Typically, these image-text combinations comprise a quotation and an appropriate picture, and their declared aim is to inspire contemplation in the reader or provide spiritual support for them (and thus propagate content in social media).

I assume that 1) due to their virality, the messages empower sharers to influence and manipulate the audience; 2) this aim is achieved through verbal and visual story-telling, as suggested by collections of tips for creating online content; and 3) with the advance of the iconic revolution and similarly to other online content, visuality is a key factor in the successful propagation. These hypotheses are tested in this study.

2. Related Concepts

2.1. Visuality and Visual Storytelling

The simplification of producing, editing and distributing pictures has also changed their role. Traditionally, pictures were treated as illustrations to texts (e.g. product shots, stills) which represent an idealized world. However, today's fierce fight for consumers' attention requires new types of visual content. The storytelling pictures (graphics, photos, videos) build on the visual narrative. This shift of perspective is reflected in the collections of stock photo agencies which used to prefer standard, neutral, therefore widely usable pictures. Today those pictures become so-called *swipe-stopping images* which look realistic and authentic. A "good" picture catches the eye, it is easily remembered, emotionally touching, more than the optical repetition of the text and reflects something more than what is evident, that is, it tells a story.[1]

When designing visual storytelling, you have to keep in mind how pictures create their impact. From the perspective of telling narratives there are three types of images: impulsive, experience-based and culture-specific pictures. Impulsive pictures are based on human instincts, and provoke predictable reactions (such as smiling or an urge of caring). The latter forms the basis of photos of charming, likeable cartoon characters, cute small children which activate the instinct of caring for vulnerable beings and trigger emotional reactions in the viewer. Experience-based pictures also arouse emotions (e.g. childhood or wedding photos, or photos of the 9/11 attacks). Emotions play an important role in memory. This was evidenced by Larry Cahill et al.[2] in an experiment where they monitored the brain ac-

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[1] John Baldoni, "Using Stories to Persuade", *Harvard Business Review*, March 24, 2011.
[2] Larry Cahill et al., "Neurobiology Amygdala Activity at Encoding Correlated with Long-Term, Free Recall of Emotional Information", *Proceedings of the National Academy of Sciences of the United States of America* 93 (1996), pp. 8016−8021.

tivity of subjects viewing 12 emotionally neutral and 12 emotionally arousing film clips. Three weeks later the subjects were asked to recall what they saw: the more emotional the film clip was, the better the participants recalled them. In another experiment, Kelsey Libert and Kristin Tynski[3] showed subjects pictures which had gone viral on image sharing website Imgur and asked them about the emotions provoked (the control group was shown "non-viral" pictures that were shared only a few times). It turned out that the images playing on positive emotions (pleasure, excitement, trust) were more successful than those playing on negative emotions (except if they surprised the viewers by going against viewers' expectations). The third category comprises culture-specific images. We can think of the emotional effect of colours or the use of different motives (such as the first colour photo taken of Earth from space[4]). It is almost impossible to look at these pictures without emotions.

So, how could we define the concept of visual storytelling? It is the telling of stories in a visual format (image, video, infographic, presentation, meme, etc.) through the mass media (typically in social media but also in print media) primarily in a way that triggers emotional reactions. It often serves marketing purposes, in which case the visual story is built around a brand.[5] As opposed to advertisements based on generalities, the speciality and difficulty of storytelling marketing is that it focuses on a single specific example and appeals to emotions instead of reason.

An impressive story, whether visual or verbal, uses the following five building blocks: 1. Hero: a character with imperfections with whom the audience can identify. 2. Conflict: if the outcome corresponds to what is expected, the story is boring and banal; however, if the outcome is achieved through struggles, the story becomes exciting. 3. Impulsivity: the story will have a lasting effect if it can pro-

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[3] Kelsey Libert and Kristin Tynski, "Research: The Emotions that Make Marketing Campaigns Go Viral", *Harvard Business Review*, October 24, 2013.
[4] Cf. Whole Earth Catalog magazine, 1968.
[5] Ekaterina Walter and Jessica Gioglio, *The Power of Visual Storytelling: How to Use Visuals, Videos, and Social Media to Market Your Brand*, New York: McGraw Hill, 2015.

voke (positive or negative) emotions from the audience. 4. Potential virality: the message is simple enough to be remembered but interesting enough to be shared with others. 5. Meaningful essence: the core message, the intended effect of the story must be clear (e.g. a joke exerts its effect through the punch line, a moral story through the lesson).[6]

If we focus on narrative images,[7] the following criteria are typically mentioned: 1. authenticity; 2. uniqueness (i.e. focus on special moments instead of stereotypical situations); 3. involvement of various senses; 4. use of archetypes (common patterns, roles, such as the warrior, the healer, the seducer, the magician, the protector etc.). The present paper also examines what components of storytelling appear in visual wisdom messages.

2.2. Online Influencers and Manipulation

My argument is that the authors of online motivational messages forge an influencer identity for themselves − based on the large number of reactions and shares − and they benefit from this role not only in the online world but also beyond, translating this advantage to specific (financial and influence power) gains.

On social media, the toolset of a century-old marketing technique is still evolving: content marketing. The essence of content marketing is to "influence a target group's behaviour by sharing useful (valuable and relevant) content with them, made specifically for them, to the benefit of all parties involved".[8] This can be done with the purpose to provide assistance (answer questions, help make decisions, give advice), to improve users' lives or to entertain. Content marketing is successful if it manages to make profit and produce mea-

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[6] Bo Bergström, *Essentials of Visual Communication*, Laurence King Publishing, 2009; Carmine Gallo, *The Storyteller's Secret: From TED-Speakers to Business Legends: Why Some Ideas Catch on and Others Don't*, St. Martin's Press, 2016.
[7] Petra Sammer and Ulrike Heppel, *Visual Storytelling: Visuelles Erzählen in PR & Marketing,* Heidelberg: O'Reilly, 2015.
[8] "What Is Content Marketing?", http://contentmarketinginstitute.com/what-is-content-marketing.

surable, quantifiable results by sharing the useful content (inspirational messages can be interpreted as a special content type). Microcelebrities with many social media followers also act as opinion leaders[9] which can be quite profitable for them: marketers increasingly often contact online opinion leaders to make subtle or express reference to a product or service in consideration of financial support or certain products. This technique is called influencer marketing. Influencers have genuine relationships with their audiences and know how to build human connections on a level that brands can't achieve through traditional forms of advertising.[10]

Influence, persuasion and manipulation are three strongly interrelated concepts. Presenting the extensive literature of manipulation is beyond the scope and intent of this paper, so only the core definition elements are outlined here. Manipulation is aimed at influencing others' ideas, opinion, emotions and behaviour,[11] so that "communicators try to create a standpoint in the audience that is favourable to them or to change (or strengthen) the opinion of the audience in a given topic".[12] Most definitions term manipulation those instances of influencing "where the target person is unaware of being influenced but ultimately gives the intended reaction".[13] But "this definition ignores the … situation where the target person is aware of being influenced and still reacts as intended by the influencer."[14] This

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[9] Alice Marwick, and danah boyd, "I tweet honestly, I tweet passionately. Twitter users, context collapse and the imagined audience", *New Media and Society*, July 7, 2010; Theresa M. Senft, *Camgirls: Celebrity and Community in the Age of Social Networks,* New York: Peter Lang, 2008.

[10] Shirley Pellicer, "Influencer vs Brand Ambassador vs Brand Advocate", *Medium*, Jan. 16, 2018.

[11] Teun A. Van Dijk, "Discourse and Manipulation", *Discourse and Society,* 2006, 17/2, pp. 359−386.

[12] Anett Árvay, *The Analysis of Manipulation in Hungarian and American Written Advertising Discourse*, PhD thesis, Budapest: Eötvös Loránd University, p. 2.

[13] István Zentai, *A meggyőzés útjai* [Ways of persuasion], Budapest: Typotex, 1998, p. 14.

[14] Eszter Bártházi, „Manipuláció, valamint manipulációra alkalmas nyelvhasználati eszközök a sajtóreklámokban" [Manipulation and manipulative linguistic elements in advertisements], *Magyar Nyelv*, 2008, 104/4, pp. 443–463, esp. 445.

controversy is eliminated in the following definition: "successful manipulation … creates a paradox situation in which the manipulator achieves its goal whether you give credit to him or not".[15] My perception is that the authors (or specialised sharers) of online motivational text-image messages manipulate their audience and forge the identity of a wise, reliable, experienced person in the eye of their audience.

3. Analyses

3.1. Questionnaire Survey

In order to prove the hypotheses, first a questionnaire survey was conducted among people sharing motivational messages.[16] The respondents were asked to specify what they first see from inspirational text-image combinations. Nearly two-thirds of them said to notice the image first, and one-third said to notice the text first. These answers were checked with a control question later on, and, interestingly, more than half of the respondents stated that both text and image are equally important to them in the case of motivational messages; 37% preferred texts and only 6% preferred images.

The respondents typically only read, like, share and comment on the messages (in this order). So passive content consumption is the most common activity, followed by predefined communication activities and the rarest is making comments which require active contribution.[17] Many respondents wrote that they save the images (so paradoxical as it may sound, the following content management meth-

[15] István Síklaki, *A meggyőzés pszichológiája* [Psychology of persuasion], Budapest: Scientia Humana, 1994, p. 129.
[16] Information about the online survey conducted in Spring 2018 in Hungary: from 183 responses 127 were relevant; gender: 90% female, 10% male; age: between 15−75 years (average: 41 years); information behaviour: very active social media users.
[17] In social media, which is based on user participation, collaboration and interaction, liking and sharing are predefined communication acts, as opposed to making comments where users may express themselves more freely.

od is a real one: "*if I like it, I share it with myself, without others seeing it!*"). In terms of the motivation of sharing, the following answers were given in order of frequency: 1. I think others will find it useful too; 2. I like the text (63 responses); 3. I want to express my feelings; 4. I send a message to someone but not directly;[18] 5. I want to entertain others; 6. I want to bookmark or save it; 7. I like the image (20 responses). In this case again, the text seemed more important than the image (cf. options 2 and 7).

I was also curious about the favourite types of motivational images of people who share them.[19] Most of the respondents mentioned that the image should be in harmony with the text. The composition should be simple, tasteful, and should express the current feeling of the sharer or should stir up emotions. The arrangement should convey a positive message in an eye-catching form and the text should inspire change. As regards design, the images are expected to be colourful, impressive and cheerful; while in terms of content, the most preferred ones are the following: happy people, nature photos, flowers, heart... Legible and well-formulated text was another point of importance for the respondents.

Regarding manipulation, the source and credibility of the message could be very important. A large majority of respondents said that they did not care about the source, only the nice/inspiring/etc. thought; nearly a quarter preferred posters sharing their own thoughts to quotes from well-known people. Some noted that they accept quotes from people "*who have achieved something in life and their experience can be inspiring for others*".

A respondent called attention to the "uselessness" of motivational posts ("*It may be that many people are inspired by these thoughts but it is much easier to push the 'like' button than to live by these words. Sometimes I have the impression that these shares are faked. We may agree with the thoughts but we find it difficult to associate with them*"). Nevertheless, the responses suggest that inspira-

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[18] It can be regarded as a manipulative strategy when the information has another, indirect recipient who is not directly notified of the message.

[19] Only the content of the answers is outlined here without providing figures.

tional messages have played an important role in several respondents' lives: they helped in a workplace problem, raised new aspects for dealing with difficulties (grief, break-up), encouraged respondents to change their lifestyle, or brought quick relief in a situation. The messages, due to their general nature, can help overcome the feeling of loneliness.

I was curious to know what the respondents thought about the (actual) purpose of the authors of image-text messages. Most of the answers stated that the aim is to bring a problem or the sharer into focus. Others thought that the actual purpose is to give food for thought, to inspire, to cheer up and to help. But some respondents believed that the authors try to solve their problems by creating (self-)encouraging messages and expressing their emotions through them. According to less common but still existing opinions, the real purpose is marketing, influencing and money-making (like-baiting).

This is related to the question of how respondents perceive the identity of the authors of motivational messages. The vast majority of the respondents perceive them as optimistic, cheerful, romantic, educated and intelligent, humorous and understanding people (about a virtually unknown person). Some noted, however, that the authors of the messages do not necessarily have personality traits in common, and that they were unable to form an opinion about the authors.

Now that we have an insight into the opinion of people sharing motivational messages, we can move on to give a closer look at the messages themselves. In order to clarify the questions left open, I conducted a content analysis.

3.2. Content Analysis

Guidelines suggest that the success of online images, shared by many users in social media, is based on storytelling. To check this assumption, I conducted an empirical examination using content analysis as a method.

The image-text combinations for the analysis were collected from popular Facebook pages.[20] I collected altogether 100 picture quotes with a high number of shares and reactions (more than 1000 in total). "Facebook Kitsch" images with only phatic expressions on them (such as have a nice day, good night, sweet dreams, etc.) were disregarded.

Based on the results of the questionnaire survey, the key aspects of the analysis were the following: 1. image content (person, landscape, other); 2. image format (photo, graphic); 3. life situation (e.g. happiness, love, disappointment, etc.); 4. source of text (quote from someone else, own thought, reference to source); 5. verbal storytelling (yes/no categories: hero; conflict; impulsivity; potential virality; meaningful essence); 6. flaws in the argument. The assignment of codes was carried out in an Excel spreadsheet with the involvement of a co-coder. In the following, I focus on aspects 4−6.

In most of the cases the image (depicting persons, landscapes or everyday objects) served only as a background for the text. None of the typical characteristics of narrative images (authenticity, uniqueness, the involvement of various senses, use of archetypes) were dominant in these images: all of them were completely average that fit to almost any situation in life. A quarter of the sample was about love, another quarter about knowing ourselves and others; the third biggest category was struggle with difficulties; and several messages built on the metaphor "life is a journey". This sample contained only a few religious messages. None of the special occasions (like infidelity; divorce; grief; childbirth) appeared in the examined messages which contained, rather, generalities. The use of archetypes is the only characteristic that appeared visibly in the analyzed images: the adorable little child, the cute animal, the sentimental film character. Emotional collages often included hearts and smileys in support of

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[20] The selected pages had at least 10,000 likes (some with over 250,000 followers).

the message. Highly emotional images can also be considered as an indicator of manipulative intent.[21]

After looking at the general characteristics of narrative images, I examined whether the main components of storytelling (hero, conflict, impulsivity, potential virality and meaningful essence) are present in the messages. The latter two were always present as the examined messages were widely spread over the internet. In 28 instances the image-text combination was clearly emotional. Only 3 out of the 100 messages had an actual hero character (e.g. a mother looking after her disabled grown-up child at the age of 101) and only 4 depicted a conflict between an expected and an unexpected situation. This suggests that the wisdom messages were successful among certain consumers not because of their uniqueness, which is a key element in storytelling, but because of their general applicability to every situation and person.

Reference handling was also considered an important aspect, as making or not making reference to the source can be a means of manipulation: on the one hand, reference to a person who lends his authority to the message, on the other hand, if no reference is made to the author, the authenticity of the quote becomes even more difficult to verify; also, if the poster creates the impression that he/she is the author of the quotation, it is a form of manipulation (as the poster looks smarter than he/she is). In 60 of the 100 messages the author remained unidentifiable, 20 messages referred to a famous person, and another 20 messages featured the text as the poster's "own" thoughts. In the two latter cases the author was named. The name of the posting website, as it has a marketing value, appeared on 54 images. The veracity and original source of such messages are difficult, if not impossible, to check (and many users do not even try to check the correctness of alleged quotations). This asymmetry in information, which could well be regarded as a manipulative strategy, puts the user sharing the text into a dominant or even opinion-leader position.

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[21] Ingrid Brodnig, *Lügen im Netz: Wie Fake News, Populisten und unkontrollierte Technik uns manipulieren,* Wien: Brandstätter Verlag, 2017.

Finally, the analysis looked at the argument techniques of deception. 26 texts contained context-independent fallacies. Parts of the texts were characterized by pleonasm (e.g., *The people you think of before you go to bed and after you get up are very close to your heart*). Exclusivity and permissible opposites are contrasted in the following example (*Men think they choose women but almost always women choose men*). And, although it is not a flaw in the argument but a stylistic fault, mixed metaphor also appeared many times in the texts (*They say it is easy to forget your problems when the weather is good. But a cool breeze is enough to blow reality back to our faces*).

4. Summary

This study is primarily concerned with three hypotheses and set out to test them by means of a survey and content analysis.

1. Motivational messages, that is, the inspirational image-text combinations shared in social media with an unexpectedly big impact, manipulate viewers (primarily by making both the authors and sharers look highly compassionate and/or intelligent, granting them influence and benefits beyond the social media: e.g., they publish books and give expensive motivational speeches). This content production method is significant as the high number of shares gives information power to the poster person. The poster thus becomes an opinion leader (influencer) who may use this power to influence the thoughts, opinion, emotions, behaviour of others in a way that the target person is not aware of the influence. Influencing through motivational messages is probably not so dangerous as pseudoscientific messages and fake news and has a smaller negative individual, physical, mental, financial and social impact but it is still suitable for identity forging by the poster. This hypothesis has been proven.

2. The experts of online content production always underline that verbal and visual storytelling is key to success. This examination, however, shows that posting verbal and visual banalities online can also be an effective strategy with a viral outcome under certain circumstances or in a specific target group. Data showed that banality

and generality are key to the success of motivational messages, which clearly breaches a fundamental principle of creating online content. This is evidently a novelty in web content creation.

3. It was assumed that the image component of motivational messages has an equally strong impact on the audience as the quoted/created text. This assumption has also proven false: the audience of motivational messages only expect the images to be aesthetically pleasing and partly relevant for the text.

P<small>AST</small>, P<small>RESENT</small>, F<small>UTURE</small>

Daniel L. Golden

Narrative Knowledge beyond the Pictorial Turn

1. Turning to the Pictorial

The term *pictorial turn* was coined by William John Thomas Mitchell, one of the earliest visionaries about the substantial transformation of our culture emerging from the domain of the visual, as an analogue to the no less visionary proposal of Richard Rorty suggesting that the main struggles of twentieth century philosophy are owed to the so-called *linguistic turn*. At the same time Gottfried Boehm came to his *iconic turn* with quite parallel aims: "The 'turn' vacillates between what Thomas S. Kuhn termed a 'paradigm' and the attitude of a rhetorical twist that recalls last fall's fashions."[1] Some twenty years later among the four "constitutive fallacies" committed within visual studies Mitchell listed in the second place his concerns about an over-interpretation of the notion: "My aim was to acknowledge the perception of a 'turn to the visual' or to the image as a *commonplace,* a thing that is said casually and unreflectively about our time, and is usually greeted with unreflective assent both by those who like the idea and those who hate it. But the pictorial turn is a *trope,* a figure of speech that has been repeated many times since antiquity."[2] As he tries to clarify, he would feel happier to use it as "a critical and historical … diagnostic tool, to analyze specific moments when a new medium, a technical invention, or a cultural practice erupts in symptoms of panic or euphoria (usually both) about 'the visual' ". Therefore all inventions like photography, oil painting, etc. will form

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[1] Gottfried Boehm and W. J. T. Mitchell, "Pictorial versus Iconic Turn: Two Letters", *Culture, Theory and Critique,* vol. 50, nos. 2–3 (2009), pp. 103–121, the quoted passage on pp. 103–104.
[2] W. J. T. Mitchell, "Showing Seeing: A Critique of Visual Culture", in W. J. T. Mitchell, *What Do Pictures Want? The Lives and Loves of Images,* Chicago: The University of Chicago Press, 2005, pp. 336–356, the quoted passage on p. 348.

such a turning point, rather than "a single 'great divide' between the 'age of literacy' (for instance) and the 'age of visuality'".[3]

While for Boehm his *iconic turn* furthers the philosophical criticism of language initiated by Husserl, Heidegger, and Wittgenstein, Mitchell locates his *pictorial turn* more in the cultural theory business: "Whatever the pictorial turn is, then, it should be clear that it is not a return to naive mimesis, copy or correspondence theories of representation, or a renewed metaphysics of pictorial 'presence': it is rather a postlinguistic, postsemiotic rediscovery of the picture as a complex interplay between visuality, apparatus, institutions, discourse, bodies, and figurality."[4] Keith Moxey described this standpoint as follows: "Bored with the 'linguistic turn' and the idea that experience is filtered through the medium of language, many scholars are now convinced that we may sometimes have unmediated access to the world around us, that the subject/object distinction, so long a hallmark of the epistemological enterprise, is no longer valid. In the rush to make sense of the circumstances in which we find ourselves, our tendency in the past was to ignore and forget 'presence' in favor of 'meaning'".[5]

The great question here is how we shall achieve this shift from the *image as representation* to the *image as presentation* without losing the capability of transferring distinct meanings in the course of visual communication. To come to terms with that point, Mitchell outlined in his pioneering work *Iconology* the research agenda of a so-called *rhetoric of images* which should amount to both "what to say about images" and "what images say", while Boehm declared his project to fit completely well into the program of Gadamerian hermeneutics, being neither semiotics nor rhetoric, but a specific interest in

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[3] *Ibid.*, pp. 348–349.
[4] W. J. T. Mitchell, "The Pictorial Turn", in W. J. T. Mitchell, *Picture Theory: Essays on Verbal and Visual Representation*, Chicago: The University of Chicago Press, 1994, pp. 11–34, the quoted passage on p. 16.
[5] Keith Moxey, "Visual Studies and the Iconic Turn", *Journal of Visual Culture,* vol. 7, no. 2 (August 2008), pp. 131–146, the quoted passage on pp. 131–132.

the understanding of the image as a genuine form of *logos*, i.e. a *meaning-generating process.*

In this regard Mitchell follows Nelson Goodman's extreme conventionalism denying any kind of metaphysical divide between distinct sorts of symbolic marks – texts and images, pictures and paragraphs – acknowledging only historical and practical contingencies in their usage. "And the differences that give rise to meaning within a symbol system are similarly dictated by use; we need to ask of a medium, not what 'message' it dictates by virtue of its essential character, but what sort of functional features it employs in a particular context."[6] It is this point I shall investigate in the following.

2. The Narrative Approach

The conceptual framework I shall use for this purpose can be presented also as a *turn,* occurring somewhere between the *linguistic* and the *pictorial,* and might be called the *narrative*. There has been an increasing interest between the end of the 1950s and the beginning of the 1980s in this perspective in disciplines such diverse as literature, psychology, pedagogy, anthropology, history, etc. From Claude Lévi-Strauss to Victor Turner, from Arthur C. Danto to Hayden White, from Paul Ricoeur to Jean-François Lyotard a great variety of scholars subscribed to the importance of *narrative knowledge* contrasted to *propositional.* The main observation here is that human beings tend to preserve a great amount of their recollections about their existences in some special verbal structures. According to Jerome Bruner this "narrative comprehension is among the earliest powers of mind to appear in the young child and among the most widely used forms of organizing human experience".[7]

The concept, originally linked to the literary, both written and oral, was rapidly extended to the textual in general (e.g. history), and

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[6] W. J. T. Mitchell, *Iconology: Images, Text, Ideology,* Chicago: The University of Chicago Press, 1986, p. 69.
[7] Jerome Bruner, "The Narrative Construction of Reality", *Critical Inquiry,* vol. 18, no. 1 (Autumn 1991), pp. 1–21, the quoted passage on p. 9.

soon it arrived at the visual too. For adherers of the narrative approach this broadened sphere of relevance means that their concerns are no more about "how narrative as text is constructed**,** but rather how it operates as an instrument of mind in the construction of reality".[8] So while one could easily suppose that the victory of the pictorial turn is bad news for the narrative being fundamentally verbal-textual, there is an obvious pressure, on the contrary, for us to talk about *narrative conventions* within visual depictions,[9] and even *visual narratives* within film theory.[10] As a matter of fact, Bruner[11] explicitly points as a paradigm shifting point to the volume *On Narrative* edited actually by W. J. T. Mitchell.[12] The blurb of this book suggests that the essays here collected should "dramatize and clarify the most fundamental debates about the nature and value of narrative as a means by which human beings attempt to represent and make sense of the world".

In Bruner's view[13] the necessary components of a narrative are the following: (1) action directed toward goals controlled by agents; (2) sequential order; (3) sensitivity to what is canonical and what violates canonicality in human interaction; (4) a narrator's perspective. However, it seems to be evident that for the most elementary structures only the first one is really needed, the other three being features of more complex forms. We can also define this basic unit with Rob-

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[8] *Ibid*., pp. 5–6.

[9] Cf. e.g. Nelson Goodman, "Twisted Tales; or, Story, Study, and Symphony", in W. J. T. Mitchell (ed.), *On Narrative,* Chicago: The University of Chicago Press, 1981, pp. 99–115.

[10] Cf. e.g. David Bordwell, *Poetics of Cinema,* Berkeley: Routledge, 2007.

[11] Jerome Bruner, *op. cit*., p. 5.

[12] W. J. T. Mitchell (ed.), *On Narrative,* Chicago: The University of Chicago Press, 1981. First published as special issues of *Critical Inquiry,* vol. 7, no. 1 (Autumn 1980) and no. 4 (Summer 1981); based on the papers from a symposium on "Narrative: The Illusion of Sequence" held at the University of Chicago, 26–28 October 1979.

[13] Jerome Bruner, *Acts of Meaning,* Cambridge, MA: Harvard University Press, 1990, p. 77.

ert Scholes as follows: "Only one kind of thing can be narrated: a time-thing, or to use our normal word for it, an 'event'."[14]

Among the features of narrative listed by Bruner, *particularity* seems to hold a special importance: "Narratives take as their ostensive reference particular happenings. But this is, as it were, their vehicle rather than their destination. For stories plainly fall into more general types: boy-woos-girl, bully-gets-his-comeuppance, and so on. In this sense the particulars of narratives are tokens of broader types."[15] This line of thought can lead even to the assumption of so called *narremes*[16] taking similar role in our meaning generating processes as their linguistics counterparts. Recurring patterns of action, place and time will form basic structures which will organize and reorganize our perception, and will become easily identifiable once their usage is learned during our first encounter with them. In order to understand a specific visual we shall search for a similar structure in our memory with a general meaning constructed from previous particularities. In that way pictorial information will serve as shortcut to a set of experiences which can help us finding our way out in the case of a next occurrence.

3. Meaning and Action

This meaning production can be traced back directly to *action* from an evolutionary psychological point of view. James J. Gibson gives the illuminating example that our predecessors had to make a difference between their moves necessary in answer to the distinct images on their retina of a zebra or of a tiger. Meanings must be born as a part of a learning process: "The simplest theory to fit all that has

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[14] Robert Scholes, "Language, Narrative, and Anti-Narrative", in *On Narrative* (cf. note 12 above), pp. 200–208; the quoted passage on p. 205.

[15] Bruner, "The Narrative Construction of Reality", pp. 6–7.

[16] See Helmut Bonheim, "Shakespeare's Narremes", *Shakespeare Survey* 53 (2000), pp. 1–11. The concept clearly goes back to the Russian formalists in literary studies, esp. Vladimir Propp, *Morphology of the Folktale,* Austin: University of Texas Press, 1968.

gone before might be to suppose *that the visual world is an un-learned experience, that it is meaningless when seen for the first time, and that what one learns is to see the meanings of things.*"[17] Independently of how we describe the mental processes going on, we will get to a unified symbol-usage as a result. For Gibson meaning originates in adaptive response which is nothing else than a certain "reactive significance the organism becomes aware of".

It is of particular interest when he talks about *nonsense forms* (in analogy with nonsense syllables) not resembling anything familiar. He refers to his own previous findings[18] according to which the same amorphous shape "might be interpreted by one observer as a woman's torso, by another as a dumbbell, and by a third as a violin". These meanings can be inherited through larger narrative structures (myths, stories, novels, films), or newly created via personal inquiry. They will come from a library of former experiences about similar cases of perception. In our age this repository will contain natural and artificial, mental and digital images as well.

There is a controversy around the possibility and desirability of a primordially *action-based* understanding within narrative theory itself. Barbara Herrnstein Smith tries to get rid of the linguistic paradigm which she calls a "dualistic model of narrative discourse" by suggesting an alternative conception of language which "views utterances not as strings of discrete signifiers that represent corresponding sets of discrete signifieds but as *verbal responses* – that is, as *acts* which, like any acts, are *performed in response to various sets of conditions*".[19]

In this alternative model narratives should be regarded not only as *structures* but also as *acts.*

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[17] James J. Gibson, *The Perception of the Visual World,* Boston: Houghton Mifflin, 1950, the quoted passage on p. 200.
[18] James J. Gibson, "The Reproduction of Visually Perceived Forms", *Journal of Experimental Psychology,* vol. 12, no. 1 (February 1929), pp. 1–39.
[19] Barbara Herrnstein Smith, "Narrative Versions, Narrative Theories", in *On Narrative* (cf. note 12 above), pp. 209–232, the quoted passage on p. 221.

The same pragmatic approach can be traced in Ernst Gombrich's investigations into the functioning of pictorial instructions.[20] Gombrich shows that (1) a narrative cannot be told by a sequence of pictures without a verbal clarification, and (2) conventionality will always be there. For the understanding of a pictorial piece of information practical expertise is indispensable, which in turn is nothing else than the generalization of previous particular experiences with situations similar to the depicted. He believes that practical knowledge is acquired by imitation and trial and error, and in this process verbalizations or visualizations will hold the same auxiliary role as *reminders* of the actions or movements in question. Thus Gombrich comes to an interpretation very much in the spirit of narremes saying: "Engineers who are used to analysing motor skills have termed the components of such actions 'chunks'. The illustrator must learn to isolate the chunks and to show the performance from its most telling angle. … It must break up the flow of the skilled movement into a fixed sequence of stationary positions."[21]

4. Pictorial Meaning and Narrative Knowledge

One of the most well-known attempts to draw on this kind of generalizations of pictorial meaning is Otto Neurath's ISOTYPE (International System Of TYpographic Picture Education) project.[22] Frank Hartmann underlines in his analysis that while on the one hand the goal of the method was "to create signs that would be as close as possible to what they stood for (that is, depicting an object with the high-

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[20] Ernst H. Gombrich, "Pictorial Instructions", in Ernst H. Gombrich, *The Uses of Images: Studies in the Social Function of Art and Visual Communication,* London: Phaidon Press, 1999, pp. 226–239.

[21] *Ibid.*, p. 230. For a solution of the ambiguity problem by moving forward to the *animation of icons* see Kristóf Nyíri, "Pictorial Meaning and Mobile Communication", in Kristóf Nyíri (ed.), *Mobile Communication: Essays on Cognition and Community,* Vienna: Passagen Verlag, 2003, pp. 157–184.

[22] Otto Neurath, *International Picture Language,* London, 1936, repr. University of Reading: Department of Typography & Graphic Communication, 1980. See online: http://imaginarymuseum.org/MHV/PZImhv/NeurathPictureLanguage.html.

est possible iconicity), technically reproducible and able to be used consistently"[23], on the other hand there was an equal care assigned to the construction of the rules for using them. For example in picture 6
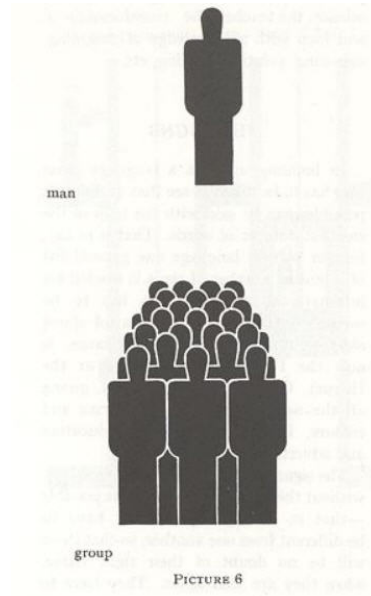
Figure 1

on page 31 we see a schematic contour with the subscription: "man", which can be multiplied to stand for "group" (see Figure 1). The verbal instructions here are the following: "The sign 'man' has not to give the idea of a special person with the name XY, but to be representative of the animal 'man'."[24] However, further layers of meaning can be transmitted by slightly modifying the initial visual: "Specific attributes could be added to a particular basic pictogram so that the figure of a workman, for example, could be distinguished by gender,

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[23] Frank Hartmann, "Visualizing Social Facts: Otto Neurath's ISOTYPE Project", in: W. Boyd Rayward (ed.), *European Modernism and the Information Society: Informing the Present, Understanding the Past,* London and New York: Routledge, 2016, pp. 279–293, the quoted passage on p. 286.

[24] Neurath, *op. cit.*, p. 31.

profession, or some other characteristic, such as 'unemployed' or 'on strike'."[25]

This kind of symbolic meaning systems became widespread all across our everyday world, often being subject to international standardization as well. From the frame of *Public information symbols*[26] for example we learn that the graphical sign once invented by Neurath will have a different meaning in certain contextual surroundings – with no less necessity of urgent apprehension than in the case of Gibson's tiger… Actually, we receive three parallel images in the set: the one with *Reference number* PI PF 003[27] has the *Title/Meaning/Referent:* "Toilets – unisex" (see Figure 2), while PI PF 004[28] will be "Toilets – male" and PI PF 005[29] will be "Toilets – female". Meaning is defined through *Function/description,* which tells us: "To indicate the location of a public toilet for males or females". Interestingly verbality is also used for the standardization of the visual part, as the category *Image content* fixes "Frontal view of standing male and female human figures".

Figure 2

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[25] Hartmann, *op. cit*., p. 285.

[26] *ISO 7001:2007 Graphical symbols – Public information symbols,* see https://www.iso.org/standard/41081.html.

[27] See https://www.iso.org/obp/ui#iso:grs:7001:PI_PF_003.

[28] See https://www.iso.org/obp/ui#iso:grs:7001:PI_PF_004.

[29] See https://www.iso.org/obp/ui#iso:grs:7001:PI_PF_005.

Without the narrative clarification the "man and woman" icon could hold rather different meanings such as "the human species has two biological genders" or "the given population contains male and female individuals" (in some scientific contexts) or "men and women shall stay separate" (in some religious contexts), and only in the context of public service will it lead us necessarily to think about a "restroom". Neither of these can be criticized as inadequate from the point of view of the representational paradigm, since neither of them can be called a right or better depiction of the concept behind.

According to the representational model the meaning of the sign would be simply "toilet" – which will prove clearly unsatisfactory in a real life situation. "Here is a toilet" comes a step closer, but we all know that occasionally this proves itself to be an overstatement of the case that "somewhere around there is a toilet". Thus the correct description really should be something like "following this sign you will get to a toilet".

That shows we are constantly in the need of using the narrative approach to receive an accurate account of actual meaning, whereas non-narrative methods of doing that will be seen only as abbreviations or reductions of the former. In this conceptual model it is always a narrative description from which pictorial meaning emerges. Based on that we could even claim that the *pictorial turn* will be able to fulfill its mission only by making use of the *narrative turn* in order to avoid falling back into the trap of the *linguistic turn*.

Philipp Stoellger

As Turns Go By:
New Challenges after the Iconic Turn

1. May We Tell a Story of Victory?

May "vision be fulfilled" and the iconic turn victorious, the question remains: what now? Which challenges do follow upon the iconic turn?

The *image* has always been already victorious. But has image-science as well been such? In a historical perspective, image and visual communication have invariably been "victorious". If one looks at politics or religion, iconicity or visuality has always been the leading and prominent mode of communication: images as presence-makers, as power-media, as icons of glory and gods.

The reasons for the dominance of "the image" are well known. Communication is predominantly visual. A hegemony like that can be called the image's *Deutungsmacht*. Scientific imaging techniques do indeed make use of this power-medium. The dominance of imaging techniques in science means – participation in and repetition of the image's hegemony. However, the scientific success of imaging techniques is highly ambiguous: In many scientific fields the victory of the image is just an *operative* one, without any reflection by image science. In medicine for example: just operative but nevertheless quite successful. This means, as well, that the victory of the *iconic turn* as a *turn to a scientific method and theory* of image-use and image-performance is *still to come.* Regarding the natural or life-sciences, I have some doubts whether it will *ever* come. The reason for this scepticism is: The media involved with medicine simply work better if there is no reflection on them but just technical use. This is a version of the usual media paradox: Media make visible while making themselves invisible.

1. The *image* is victorious, the turn to *imaging techniques* as well.

2. Research using such imaging participates in this victorious medium and its power.

3. However, the life- and natural sciences are immune against imaging-*science*, because imaging (technique) is working without and even better without imaging-science and -theory.

4. This means that the turn to scientific and methodical research in imaging practices is still an open challenge.

2. What May Come after the Turn?

After a quarter of a century, when the turn was proclaimed at the beginning of the 1990s, and as the times and the turn go by and become history of science, what are the remaining or new challenges?

1. Which *methods* do we have for the "work on images"? Usually, we refer to *historical* and *empirical* methods. To interpret an image would mean to tell its (hi)story, and to do empirical research on its production, techniques, effects, etc. However, is it only these two mainstream methods we are acquainted with? What about hermeneutics, phenomenology, semiotics, iconic criticism et al.? Here the challenge of doing *methodology* arises.

2. Within the applicational turn, there is some *lack of theory*. That is why we need more work on concepts and theory. The subsequent challenge is "doing *theory*": what concepts, distinctions and questions do we use? What is the background theory for the image? Is it art or design, is it a sign, a medium, an image-act, a technique, a cultural practice, a phenomenon, or almost nothing like a shadow, a fake or a fact, or is it just communication? Each of these concepts is an indicator for a different background theory, in which the image is included, and each concept offers an explication of "what an image is".

3. In cultural studies, I notice a *broadening of the horizon*: expanding to visual culture, or crossings like scripture and image.

Because images are always "embedded", it is a challenge how to deal with *combinations and chiasms* like "image and word", "and number", "and πρᾶγμα", "and music", etc. We need new perspectives on the multimodality and interferences of iconicity with verbality, scripturality and embodiment, etc. This would mean to address the chiasms of deixis and lexis. I would call it *differential analysis* of the interferences between iconic and verbal modes of communication: how iconicity and non-iconic modes of communication are intersecting. That is, I suggest to look for intersections and interferences.

4. There are signs for next turns or shifts: embodiment, (de/ trans/re-…)figuration, mimesis, mediality, materiality (new materialism). Could it be that a wider horizon "after the iconic turn" is a turn to *mediality*?

5. However, while word and image are fighting for the victory, the *number* is already victorious (algorithms, big data) – and the fourth, the tone (or sound) is forgotten. Word, image, number and tone – are the four figures, intersecting.

3. Example: Embryo on a Pin

Medical imaging techniques are not just depictions or representations of facts. They *can* be so, but they are more: A CT or neuro-imaging may become a quasi-religious icon, shaping and forming our "image of life". The invisible, the origin of life becomes visible – as if by a revelation of the secret of life. And the images themselves become alive – *living* images: like the first gestures of the unborn baby. May one say, some images become an image of life's holiness – and thereby holy images, icons in a quasi-religious meaning?

One example is the famous 16-cell human embryo on a pin, produced by Dr. Yorgos Nikas, commercialized by Science Photo Library (sciencephoto.com). Nikas' commentary of the image provides the following "information":

Caption: Human embryo. Coloured scanning electron micrograph (SEM) of a human embryo at the 16-cell stage on the tip

of a pin. The ball of cells (yellow) of the embryo is known as a morula, a cluster of almost identical, rounded cells, each containing a central nucleus. This 16-cell embryo is about three days old. It is at the early stage of transformation from a single cell to a human composed of millions of cells. The cells multiply by repeated cleavage divisions (mitosis) and will form a hollow ball of cells (the blastocyst). Development of the blastocyst occurs before the embryo implants into the wall of the uterus (womb). Magnification: x130 at 6x7cm size. Magnification: x450 at 8x10 inch size.[1]

What is going on in this image? What is shown and how?

1. It is a SEM-image (scanning electron microscope) of an "embryo on a pin",
2. made in high vacuum as vacuum-stable object,
3. coated with an ultra-thin gold or graphite layer.
4. The human (?) embryo was frozen (where from? Legal and ethical questions…) and was coated, prepared for the imaging procedure, i.e. the embryo was killed for making the image (was the embryo alive before?).
5. For the composition of the image, the killed embryo and the pin were probably assembled secondarily, i.e. the image is a fictive assembly.
6. The colours and the light are free invention, producing an "aura" of the embryo, as if the light came out of it, or as if the "secret of life" were presented (like a revelation?).
7. The dead embryo (simply: the frozen and coated cells or the killed human life) is presented and transfigured: a mysterious transfiguration of something dead as alive.
8. The pin is showing something somehow: the contrast of the size (big needle, small embryo); presenting the embryo and transfiguring the (not anymore) living human embryo into a "secret of life".

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[1] Online: www.sciencephoto.com/media/313647/view/16-cell-human-embryo-on-a-pin-sem.

9. The pin is a sharp deixis: The image shows the pin, the pin shows the embryo, pointing at it.

10. The pin is the re-entry of the image within the image, a metonymy of the image in the image, or an exemplification of deixis.

11. The killed and transfigured embryo is shown (presented, pointed at) by the pin; the pin embodies the deixis and the image shows the showing of the embryo.

12. The image looks like a depiction or representation, but it is rather an inventive production and auratic presentation.

13. The public circulation of the image (including copyright and economical aspects) with a high reception made it into a "science-icon".

14. The thesis for medical images like "the embryo on a pin" is: They are highly artificial images, whose artificiality serves the pretension of the most faithful depiction or imprint. We treat these images as if *that, what they show,* was *the shown itself.* Are they what they show? We believe that these are depictions – thereby we are treating these images *not as images, as not-images, but as imprints* and *visualized data.*

4. Methodological Proposal:
   ## Seven Steps of Work on the Image

Scientific as well as didactic image-use is "dangerous", because it is a use of a quite powerful medium. May it be for teaching and learning, may it be for making visible what would remain invisible otherwise: Image-use is a challenge with methodological consequences. Whenever we make use of an image, seven steps of reflection and explication are necessary and can be methodically distinguished.

All of them are consequences of the concept of "image": An image is not saying but rather showing: (often) something as something, showing the showing itself (reflexive), showing itself ([non-intentionally) and always hiding all the rest. The image is of course always in use, pragmatically embedded. If I speak of forces, powers

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and effects of an image, it is a mode of speech, which may be justified by phenomenology or media theory: The image as medium is a phenomenon with power and effects.

First, the common use of an image is: to show what is said. In teaching or in medicine and in religion, the image shall show (make visible), what was said. Accordingly the image remains dependent on the text. However, this perspective is half-blind because the image is more than an instrument for illustration. Look at online newspapers: The image more and more dominates the news and the text becomes a comment on the picture. In medical diagnosis as well as in lectures it seems to be similar: the lecture becomes a commentary on the ppt-images, or therapeutical conversation becomes a comment on the images.

If the image is used for "illustration" or "proof", it shows *more* than merely what is said. One may use the "embryo on a pin" as an illustration to show how small it is or how it looks like, but there is *more* at stake: a demonstration of the power of stem-cell-research, or as an impressive "science-photography" with some fascination.

The second challenge therefore is: not only to show what is said, but to *say what is shown* and how the image is going beyond what is said. That's the crucial "problem" in image use: The image shows always *more* than what has been said. If the image was introduced for illustration, the "image game" has its own dynamics. To become aware of this "more", and explicate *what more is at stake*, is a second and difficult challenge.

In the illustrational or demonstrative use of the "embryo on a pin", showing simply how an embryo looks like and how small it is, one cannot or should not overlook that there is more shown: simply the colours for example and the play of light, the composition of a rough needle together with the "living" embryo. The presentation is more than a mere representation of an embryo.

The third challenge is that showing an image is not only showing something said but showing a *showing* and the *how* of showing. By using the image, one gives space and time for an event of showing. This is where the iconic difference becomes relevant: The image

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may show something (said), but *how* it does so is different*, iconically different.*

Thereby, the seeing is different as well: recognizing something or seeing the "showing". The Imdahl-difference of recognitional seeing and seeing-seeing is a marker of this difference.[2] For image-use the challenge is to reflect and explicate the difference. Or at first: to be aware of and to keep this difference. Otherwise the image would be reduced to its "content", may it be the propositional or iconic content.

The *image* of the embryo on a pin is an image, of course. What is shown is one thing, *how* it is shown another. "Don't think but look" – as Wittgenstein pointed out and claimed. This claim is not a claim for a "naive staring at". I suppose it means pointing at a difference – in perception: Do not only recognize what you already know and re-cognize, but rather look at it to see something unknown, overlooked, strange, etc. This is a rule for perception: not mere repetition of the known but openness to the new or different.

Fourthly, the consequent challenge is *saying* the showing, i.e. reflecting and saying the *how* of showing, the iconic performance and "pregnance" (conciseness). This fourth challenge is precise articulation of the *how* of showing and its performance.

The how is crucial and decisive for the embryo on the pin: the play of light, the colours, the composition etc. And the "how" becomes again relevant in the use of the image: as an icon of "human dignity" or as a demonstration of medical power.

Fifth, the image in itself is always self-referential and self-reflexive. In the showing of something somehow, the iconic performance of an image consists in "showing *itself*" ([non-]intentionally). The image may show something somehow, but for doing so, at first and at last, it *shows itself.* The exposition of something somehow is as well an exposition of "an image" and what an image is and is capable of. *Showing the showing is a mode of self-reflection of each*

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[2] Max Imdahl, "Cézanne – Bracque – Picasso: Zum Verhältnis zwischen Bildautonomie und Gegenstandssehen", in Max Imdahl, *Gesammelte Schriften*, vol. 3: *Reflexion – Theorie – Methode*, Frankfurt/M.: Suhrkamp, 1996, pp. 300–380.

image – and needs to be explicated. This "self-showing" or "self-exposing" is the aspect of phenomenality and appearance, in contrast to the intentional monstration of something.[3]

Therefore, the fifth challenge consists in: saying the "showing itself", the reflection on and explication of phenomenality. This is what Imdahl called "Ikonik": the reflection on what is genuinely "iconic", specific to the image in difference to all other media.

In the case of "the embryo", the showing itself is repeated and reflected in the image itself: The showing is repeated in the shown needle showing the embryo. The iconic presentation – the pin *presents* the embryo – is a *re-entry* of the image within the image: The image shows something, this showing is "made explicit" in the image by the needle. Like a mirror in the mirror it is an entry into a reflexive labyrinth.

Here it becomes manifest and explicit what an image does: appearance, monstration and presentation – in and with the representation. That this re-entry is presented as a *needle*, is not arbitrary: Remember the question for how many angels find place on a needle? And the needle seems to be an aggressive intervention, but the needle is not clean and sharp but rather rough. How rough is the medical intervention – in comparison to the embryo?

Sixth: The five challenges up to now have been "work on the image" while the image is working on us. It is an interplay of *manifest* factors in this image-game. Even the showing something, somehow and "itself" are manifest factors of the image performance. Keeping these differences and explicating them is hard enough. But it even gets harder.

Images are not only manifest and manifestations, but have their latency: What is *not* shown: the production: the killing and preparation of "human life". What is "out of sight" or out of question: Is it really a human embryo? The assembly (or montage, installation): the iconic combination of needle and embryo. The translucent but

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[3] See Daniel Dayan, "Sharing and Showing: Television as Monstration", *The End of Television? Its Impact on the World (So Far) – The Annals of the American Academy of Political and Social Science*, vol. 625 (2009), pp. 19–31.

hidden background; the laboratory situation, the photographer, etc., the commercial context of distribution and consumption, the political context about stem-cell-research, the ethical and legal contexts: killing for making an image – despite the human dignity of the embryo (or not – what is just the question).

The seventh challenge is what I tried to do here: to reflect on images as showing, something, somehow, the showing itself with reflexive re-entries – and to articulate by decisive differences the saying, the speech or explication of the whole complex. One may call it the *expanded method for image-science.* Without consideration of these seven steps, the work on the image remains somewhat blind.

The seven challenges are all together only the *first part* in the work *on* the image – explicating the work *of* the image. This is a *responsive* explication, in response to the image and its powers, and in methodical responsibility. But – that is not the whole challenge. The image-pragmatics has a double meaning: work *on or with* the image and work *of* the image itself. Usually we work *with* images; in image science, we work *on* them by research about their use, effects, performance and potentials. But thereby the image is working with and on us. Do not forget the retroactivity of the image.

The *second part* of image-science should reflect on what and how *we* are working on and with the image, what we are *doing* with them in working on them, i.e. also what and how we speak and think. The iconic difference reappears in the modes of speech and thought and theory. This means as well that we are not just saying something somehow in a clean distance. We do not only describe neutrally, but we are doing something somehow: for example, we are *showing* in our saying something somehow. In religion one would call that the dimension of witnessing in our speech – in risky self-exposition. That is at stake as well in science – because in any saying a showing and doing is present.

So – what may *I* have done with the "embryo on a pin" in this exemplification? And what may I say in response to the image? The strength and weakness of the image lie in its openness for interpretation and quite different use. While the image is relatively concise – the message, the performance, the reception and use remain quite di-

verse. That is a weakness if one expects unambiguity (in propositions and reference), but it is a strength in regard to its power and potentiality. The consequence is: The image needs further articulation, or with Charles Taylor: We must make *explicit* what *we* may see.[4]

What may be the latent claim or supposition of the image? What is its latent suggestion? So little and so alive? So little and so human? So holy and humane? Ecce embryo? Or vice versa: Look what we can do! And there was light and life – by medical intervention! It is our power, it is in our hands, not random or God's choice.

From a phenomenological perspective, I prefer to say: We must *respond* to the image, in our own responsibility. We are used by now to the image of an embryo – but it can be surprising or even breath-taking: ecce embryo, ecce homo, ecce imago …

5. Time for Pensiveness

I challenged the idea of a victory and fulfillment of the iconic turn: not only because in several sciences the iconic turn is yet to come, but also because the new empowerment of "the image" is ambiguous. The power of the image is tremendous, but thoughtful reflection and iconic criticism are quite slow and delayed. In comparison to visuality, words and concepts like understanding and theory have always been delayed. This is why word and concept as delayed media tend to criticize and "master" the image. Philosophy's and theology's histories are stories of the self-empowerment of the word and concept against the image – like David against Goliath.

That is why the "victory of the iconic turn" resembles "Goliath strikes back". Always and from the very beginning more powerful, images strike back against the weak forms of word and concept. However, this striking back is in a way a necessary destruction of the self-empowerment of word and concept.

By the way, the story would become more complex and appropriate if "the number" was taken into consideration. The iconic-

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[4] Charles Taylor, *Sources of the Self: The Making of Modern Identity*, Cambridge, MA: Harvard University Press, 1989, p. 34

turn may be overruled by the most powerful medium of digital communication: the number. May it be that behind the struggle of word and image the number becomes at last the actually dominant medium? We are confronted with "big data", but rarely with "big images". We live in the realm of algorithms. May the image be as strong as the numbers – or even stronger?

Kristóf Nyíri

Postscript:
The Victory of the Pictorial Turn

1. In the Beginning Was the Image

Pictures, carved, drawn, painted, belong to the primordial cultural heritage of humankind. Think of cave art. The earliest known cave paintings, those at the Chauvet cave, are some 37,000 years old or more. These paintings have an overwhelming quality of striking naturalism and realism (see e.g. Figure 1), applying foreshortening and hidden-line occlusion to provide perspective and depth. They do not
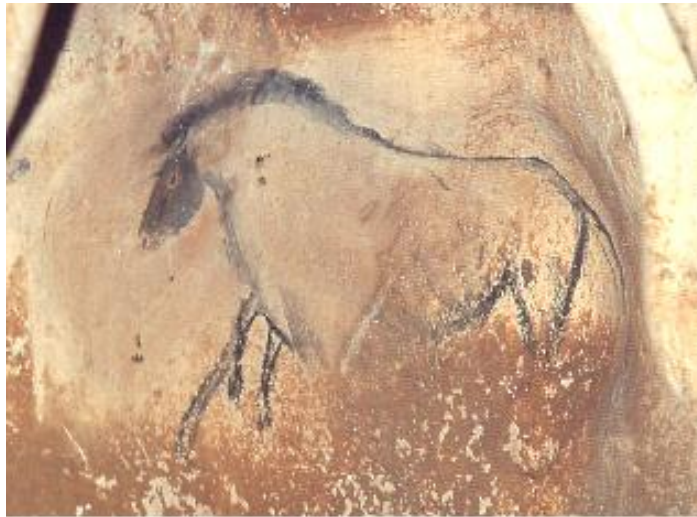
Figure 1: Painting of horse at the Chauvet cave.[1]

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[1] Jean-Marie Chauvet – Eliette Brunel Deschamps – Christian Hillaire, *Dawn of Art: The Chauvet Cave – The Oldest Known Paintings in the World* (1995), transl. from the French by Paul G. Bahn, New York: Harry N. Abrams, 1996, p. 113.

at all resemble primitive drawings like, say, those by children. Children's drawings, as Sully had famously put it, are "led not by a lively and clear sensuous imagination, but by a mass of generalised knowledge embodied in words".[2] Two decades ago Nicholas Humphrey has published a paper on the drawings of a child with mental deficiencies who possessed almost no verbal knowledge. The drawings show baffling parallels to the naturalism of early cave paintings. Attempting to offer an explanation for those parallels, Humphrey ventures to ask if it is not possible that "language was absent in the general population of human beings living in Europe 30,000 years ago", adding that the "standard answer, coming from anthropology and archaeology", is that "[h]uman spoken language surely had its beginnings at least a million years ago, and most likely had already evolved to more or less its present level by the time the ancestral group of *Homo sapiens sapiens* left Africa around 150,000 years ago".[3] Humphrey then goes on to quote some recent publications questioning the "standard answer", but does not seem to be aware of the immense literature, beginning with Plato's *Cratylus* and Quintilian's *Institutio oratoria*, reaching through the 18th century (Vico, Rousseau, Condillac, the Abbé de l'Épée) to the 19th (Sicard, Tylor, Mallery, Sittl), the 20th (Wundt, Critchley, Merleau-Ponty, Stokoe, Kendon, Hewes, Donald) and the 21st (Corballis), a literature maintaining that, and elucidating how and why, verbal language could not have possibly emerged before the coming into being of visual language – the language of gestures and facial expressions.[4]

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[2] James Sully, *Studies of Childhood*, New York: D. Appleton, 1896, p. 395. For a brief summary of some alternative directions in children's drawings studies today see my https://www.academia.edu/33641487/Childrens_Drawings_and_Common-Sense_Realism.

[3] Nicholas Humphrey, "Cave Art, Autism, and the Evolution of the Human Mind", *Cambridge Archeological Journal*, vol. 8, no. 2 (1998), p. 173.

[4] The list of authors I provide above is far from being exhaustive. I offer a more detailed discussion of the topic in the chapter "Time and Image in the Theory of Gestures", in my volume *Meaning and Motoricity* (https://www.academia.edu/12683510/Meaning_and_Motoricity_Essays_on_Image_and_Time).

Let me here give three quotes. The first, from vol. I of Wilhelm Wundt's *Völkerpsychologie*, published in 1900. For Wundt, gesture language has "an originality and naturalness such as speech neither possesses today nor has ever had in any forms hitherto uncovered by linguistics"; he emphasizes the merits of the view according to which "gestural communication is the original means of communication. … gesture, as the natural aid of communication, preceded spoken language".[5] The second quote, from Critchley, maintaining, very much in line with what Wundt himself some pages later in his book claimed, that there is a " 'natural sign-language' of the deaf and dumb [which] is largely unfamiliar to outsiders and indeed many are unaware of its very existence. ... Even very young deaf-mutes communicate freely with each other and the presence of this natural sign-language at an age prior to their receiving systematic instruction points to an 'instinctive' or at least a primitive type of symbolization."[6] The third quote, of an earlier date, from a speech given by Amos Kendall at the inauguration of the College for the Deaf and Dumb in Washington DC, in 1864, summing up in a nutshell allegory the fundamental argument against the priority of verbal language: "We read", said Kendall, "that Adam named the beasts and birds. But how could he give them names without first pointing them out by other means? How could a particular name be fixed upon a particular animal among so many species without some sign indicating to what animal it should thereafter be applied?" In the course of human evolution, Kendall implied, it was the language of gestures,

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[5] Wilhelm Wundt, *The Language of Gestures* (English translation of a chapter of *Völkerpsychologie*, vol. I), The Hague: Mouton, 1973, p. 56.
[6] Macdonald Critchley, "Kinesics; Gestural and Mimic Language: An Aspect of Non-Verbal Communication" (a paper based in part on Critchley's 1939 book *The Language of Gesture*, London: Arnold, 1939), in his collection *Aphasiology and Other Aspects of Language*, London: Edward Arnold, 1970, pp. 305 f. I have discussed Critchley at greater length in my paper "Pictorial Meaning and Mobile Communication", in Kristóf Nyíri (ed.), *Mobile Communication: Essays on Cognition and Community*, Vienna: Passagen Verlag, 2003, pp. 157–184.

and not verbal language, which introduced conceptual order into the episodic imagery of pre-linguistic thought.[7]

The definitive work on the topic is that by Michael Corballis, *From Hand to Mouth: The Origins of Language*, published in 2002.[8] The view Corballis unambiguously represents is that "human language evolved first as a system of manual gestures", with "communicative gestures emerg[ing] from actions on the physical world and … then adapted and conventionalized".[9] Indeed he agrees, also, with the position according to which "spoken words might themselves be better understood as gestures… … It may be … appropriate to think of speech … as combinations of sound 'gestures' that we can make by the deployment of … the lips, the blade of the tongue, the body of the tongue, the root of the tongue, the velum (or soft palate), and the larynx."[10] That is, Corballis sides with the so-called mouth-gesture theory, itself having a millennia-old history beginning with Plato. It was to Plato's arguments Geiger in 1869 returned when claiming that "language is an imitation by movement, a mimicking with the organs of speech".[11] And it was probably in the historical context of Geiger's (and Cassirer's) work the Hungarian playwright and critic Béla Balázs could write, in his 1924 film theory book *Der sichtbare Mensch*:

> Linguistic research has found that the origins of language lie in expressive movement – that is, that man when he began to speak moved his tongue and lips similarly to the other muscles of his face and body – just as an infant does today. Originally the purpose was not the making of sounds. The movement of tongue and lips was at first the same spontaneous gesturing as every other expressive movement of the body. That the former produced sounds was a secondary adventitious phenomenon,

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[7] I am quoting after David F. Armstrong – Sherman E. Wilcox, *The Gestural Origin of Language*, New York: Oxford University Press, 2007, p. 8.

[8] Princeton, NJ: Princeton University Press.

[9] *Ibid.*, pp. 32 and 52.

[10] *Ibid.*, pp. 118 f.

[11] Lazarus Geiger, *Der Ursprung der Sprache*, Stuttgart: J. G. Cotta, 1869, p. 180.

which was only later used for practical purposes. The imme-
diately visible message was thus turned into an immediately
audible message. In the course of this process, as in every
translation, a great deal was lost. It is the expressive move-
ment, the gesture, that is the aboriginal mother-tongue of the
human race.[12]

2. Image and Metaphor

Once the thesis of the historical priority of visual language is
accepted, and I do not see on what grounds it could be rejected, the
primacy of visual thinking, too, must necessarily be recognized. Our
early ancestors must have been thinking beings, but since they pos-
sessed no verbal language, their thinking must have been sensual,
and indeed fundamentally – this is what the evidence we have points
to – visual. As Rudolf Arnheim so compellingly shows in his *Visual
Thinking*[13], mental images are what we think with; words and sen-
tences are merely captions. Of course captions play an essential role.
Of course Allan Paivio's *dual coding approach*, underlining that the
thought processes of a normal human person today consist of the in-
teraction of imagery on the one hand and the verbal on the other, is
entirely convincing.[14] But in that interaction it is images that play the
dominant role. Discussing the question of how *verbal narratives* are
memorized, anthropologist Maurice Bloch argues that "narratives are
not stored as narratives", they are retained in the form of visual im-
agery, in the form of "imaginations of 'what it was like' "; it is the
"imagined event and not the text that is remembered".[15] And coming
back to Paivio: recall his metaphor theory, proposing on the basis of

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[12] English translation by Edith Bone, here quoted from Daniel Talbot (ed.), *Film:
An Anthology*, New York: Simon and Schuster, 1959, p. 283. I have rectified the
translation at one point.

[13] Berkeley: University of California Press, 1969.

[14] See especially Allan Paivio, *Imagery and Verbal Processes*, New York: Holt,
Rinehart and Winston, 1971.

[15] Maurice E. F. Bloch, *How We Think They Think: Anthropological Approaches
to Cognition, Memory, and Literacy*, Boulder: Westview Press, 1998, pp. 122 f.

experiments, that to understand a new – "live" – metaphor involves visually – more broadly: sensually – imagining the picture the metaphor expresses.[16]

Nor is Paivio's proposal entirely new. In an early paper[17] Arnheim refers to works by John Murry and Stephen Brown, published in the 1920s. Murry argues, in a 1927 essay,[18] that there is merely "a formal difference between metaphor and simile and image", "metaphor is compressed simile". However, he points out, not every image is a "visual image"; we should reject "the suggestion that the image is solely or even predominantly visual". "The image may be visual, may be auditory, may refer back to any primary physical experience." By contrast to Murry, Brown definitely focuses on the role of the visual/pictorial. "Metaphor", he writes, "is in its origin an attempt to express in terms of experience thoughts lying beyond experience, to express the abstract in terms of the concrete, to picture forth the unfamiliar by means of the familiar, to express insensuous thought by sensuous terms." As he some pages later puts it: metaphor amounts to an "imported image coming vividly before our mental vision, while the notion which is the real subject of the discourse momentarily fades into the background, and is seen only through the image". And to conclude here with yet another essentially important passage by Brown: "The use of metaphor ... involves no sacrifice of truth. But I think we may go further and say that it may express a portion, or at

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[16] See Allan Paivio – Mary Walsh, "Psychological Processes in Metaphor Comprehension and Memory", in Andrew Ortony (ed.), *Metaphor and Thought* (1979), rev. second edition, Cambridge: Cambridge University Press, 1993. For a more detailed description of Paivio's experiment see my "Time As a Figure of Thought and As Reality", in András Benedek and Kristóf Nyíri (eds.), *Images in Language*, Frankfurt/M.: Peter Lang, 2011, pp. 57–67.

[17] Rudolf Arnheim, "Abstract Language and the Metaphor" (1948), in Arnheim, *Toward a Psychology of Art: Collected Essays*, Berkeley: University of California Press, 1966, pp. 266–282.

[18] John Middletown Murry, "Metaphor", repr. in Murry, *Countries of the Mind: Essays in Literary Criticism*, second series, London: Humphrey Milford / Oxford University Press, 1931, pp. 1–16.

least an aspect, of the truth which would not otherwise find expression."[19]

3. The Visual Mind

With images playing such an obvious role in mental processes it is understandable that philosophy, ever since Plato, took the human mind to be a predominantly visual one. The line from Plato through Aristotle to the British Empiricists in the 17th–18th centuries is continuous, but temporarily faded away in the last decades of the 18th and the first half of the 19th centuries.[20] This was probably due, as Darwin's half-cousin Galton later hypothesized,[21] to the printed word becoming all too abundant. Based on empirical investigations, Galton outlined a well-rounded and extremely influential theory of mental images, a theory with immediate impact on Binet, James and Ribot, and exploited somewhat later by Titchener, Koffka, Russell[22] and innumerable others, with echoes even in Wittgenstein's thinking.[23]

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[19] Stephen J. Brown, S.J., *The World of Imagery: Metaphor and Kindred Imagery*, London: Kegan Paul, Trench, Trubner & Co., 1927, pp. 33 and 50. For a more detailed exposition of Murry's and Brown's arguments see my online volume *Pictorial Truth*, https://www.academia.edu/32335788/Nyiri_Pictorial_Truth, pp. 116 –119.

[20] For a detailed exposition of the topics I am summarizing in the present paragraph and the next, see the sections "From Plato to Hume", "The Darwin Effect" and "The Visual and the Motor", in the chapter "Visualization and the Horizons of Scientific Realism" of my volume *Meaning and Motoricity* (cf. note 4 above).

[21] Francis Galton, *Inquiries into Human Faculty and Its Development* (1883), 2nd ed. London: J. M. Dent & Co., 1907.

[22] See Bertrand Russell, "On Propositions: What They Are and How They Mean" (1919), *Aristotelian Society Supplementary Volume*, 2, pp. 1–43, repr. in J. G. Slater (ed.), *The Collected Papers of Bertrand Russell*, Volume 8: *The Philosophy of Logical Atomism and Other Essays*, *1914–19*, London: George Allen & Unwin, 1986, pp. 284 f.: "If you try to persuade an ordinary uneducated person that she cannot call up a visual picture of a friend sitting in a chair, but can only use words describing what such an occurrence would be like, she will conclude that you are mad. (This statement is based upon experiment.) I see no reason whatever to reject the conclusion originally suggested by Galton's investigations, namely, that

A particularly fascinating topic is the significance of mental images as seen from a religious-philosophical perspective.[24] Reflecting on the indispensable role of images in human cognition was of course never a characteristic preoccupation for philosophies of religion in the Judeo-Christian tradition. Still, there have been, and are, notable exceptions. Aquinas embraced, and built on, the Aristotelian dictum that "the soul understands nothing without a phantasm", and I take it that there is a close relationship between Aquinas's notion of phantasmata and our notion of mental images. Closer to our age, Cardinal Newman, in his *Grammar of Assent*, first published in 1870, interprets memory images as "reflections of things in a mental mirror", as "facsimiles of facts",[25] and points out that mental images possess a psychological power that mere concepts do not have. The Anglican theologian and philosopher Austin Farrer, in his 1943 book *Finite and Infinite*, taking up the notion of phantasmata construed the "concrete phantasma" as "a concrete image, but sketchy", underlining however that "there are cases in which the image is as explicit as we could make it".[26] Romano Guardini, one of the most influential Catholic intellectuals of the twentieth century, in his 1950 essay "The Senses and Religious Knowledge", stresses the role images play in the depths of our subconscious, ready to enter consciousness whenever appropriate external stimuli reach us. The

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the habit of abstract pursuits makes learned men much inferior to the average in the power of visualizing, and much more exclusively occupied with words in their 'thinking'."

[23] Cf. Ludwig Wittgenstein, *Preliminary Studies for the "Philosophical Investigations": Generally Known as the Blue and Brown Books*, ed. by Rush Rhees (1958), Oxford: Basil Blackwell, 1964, p. 18.

[24] The passage here following I have taken over from my paper "Images in Natural Theology", in Russell Re Manning (ed.), *The Oxford Handbook of Natural Theology*, Oxford: Oxford University Press, 2013, pp. 581–594. For an unabridged online version of the paper see https://www.academia.edu/4365375/Nyiri _Images_in_Natural_Theology.

[25] John Henry Newman, *An Essay in Aid of a Grammar of Assent*, London: Burns & Oates, 1881, pp. 23 f.

[26] Austin Farrer, *Finite and Infinite: A Philosophical Essay*, Westminster: Dacre Press, 1943, p. 125.

innermost core of a human being, as Guardini puts it, is in the end essentially dependent on images, "sein inneres Wesen kann im Letzten … nur aus Bildern leben".[27] Another leading Catholic thinker, Karl Rahner, in 1983 gave a talk on the theology of images in which, referring back to Aquinas's formula *conversio ad phantasma*, he emphasized that traditional Christian anthropology has always regarded intellectual cognition on the one hand, and sensibility on the other, as forming a unity, so that even for the most sublime knowledge it is sensory experience that provides content.[28] The Russian Orthodox theologian Paul Evdokimov, in his 1972 book *The Art of the Icon*, underlined that the "visual is intimately associated with the intelligible; … the word and the image are closely linked".[29] On the Lutheran side, Rainer Volp, in his 1980 *Theologische Realenzyklopädie* entry "The Image As a Fundamental Category of Theology" recalled Schleiermacher's view that "in jedem wirklichen Denken Bilder mitgesetzt sind"[30], *in all genuine thinking images too are contained*. A relatively recent work with a Lutheran background is Sigurd Bergmann's volume *In the Beginning Is the Icon*. "[T]heology", Bergmann here maintains, "must learn to understand the uniqueness and autonomy of the visual medium. The image has a unique power vested in its capability of producing inner images with external measures and thus influencing our imaginative abilities and our capability to act in the tension between our internal landscapes

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[27] Romano Guardini, *Die Sinne und die religiöse Erkenntnis*, Würzburg: Werkbund-Verlag, 1950, p. 65.

[28] Karl Rahner, "Zur Theologie des Bildes", *Halbjahreshefte der Deutschen Gesellschaft für christliche Kunst* (München), vol. 3, no. 5 (1983), pp. 2–8, this formulation on p. 2; see also the revised version in Karl Rahner, *Sämtliche Werke*, vol. 30, *Anstöße systematischer Theologie: Beiträge zur Fundamentalontologie und Dogmatik*, Freiburg: Herder, 2009, this formulation on p. 472.

[29] Paul Evdokimov, *The Art of the Icon: A Theology of Beauty* (translation of *L'Art de L'Icône: Théologie de la Beauté*, Paris: Desclée De Brouwer, 1972), Redondo Beach, CA: Oakwood Publications, 1990, p. 32.

[30] Rainer Volp, "Das Bild als Grundkategorie der Theologie", in *Theologische Realenzyklopädie*, vol. 6, Berlin: de Gruyter, 1980, p. 558.

and external surroundings."[31] And in the book *Judaism: A Way of Being*, by David Gelernter, one encounters the following formulation: "Images are the stuff of thought. … we spend much of our mental lives … wrapped up in imagery, beyond the reach of language."[32]

4. Kinaesthesis

Coming back to Galton: he was especially struck by the problem that – bafflingly but obviously – those people, too, can get along with the task of thinking who appear to be unable to experience mental images. And this was his solution to the problem:

> the missing faculty seems to be replaced so serviceably by other modes of conception, chiefly, I believe, connected with the incipient motor sense, not of the eyeballs only but of the muscles generally, that men who declare themselves entirely deficient in the power of seeing mental pictures can nevertheless give lifelike descriptions of what they have seen and can otherwise express themselves as if they were gifted with a vivid visual imagination.[33]

The idea that the motor sense and visual imagery very much hang together was forcefully represented by the prominent turn-of-the-century American psychologist Titchener. "Meaning", Titchener claimed, "is, originally, kinaesthesis; the organism faces the situation by some bodily attitude… meaning is carried by all sorts of sensational and imaginal processes. … And words themselves, let us remember, were at first motor attitudes, gestures, kinaesthetic con-

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[31] Sigurd Bergmann, *In the Beginning Is the Icon: A Liberative Theology of Images, Visual Arts and Culture*, London: Equinox, 2009, p. 99. The book was first published in Swedish, in 2003.

[32] David Hillel Gelernter, *Judaism: A Way of Being*, New Haven: Yale University Press, Nov. 2009, pp. 3 and 20.

[33] Galton, *Inquiries into Human Faculty*, p. 61.

texts".[34] Words build on imagery, but imagery, Titchener stressed, builds on the motor dimension.[35] I venture to sum up the first part of Titchener's message in the following way: When an organism encounters a problem, it reacts with a motor answer. If that answer is not equal to the problem, and if the organism is one gifted with sight, it then *forms itself a picture of the problem* – that is, it creates a specific mental image.

5. From Typewriting to Photography

Titchener's ideas were soon submerged under the torrent of the "linguistic turn" the authors of the present volume have so often referred to. That turn, clearly, had many reasons. My outlandish conjecture is that one of them was the *typewriter* becoming the dominant device of scholarly production. Just as our computers and smartphones today have an influence on our ways of composing a text (or indeed texts combined with images, still or moving), so did the typewriter, by the 1900s, determine the thinking of its users. A famous early example is Nietzsche, who in 1882, summarizing his first type-

SIE HABEN RECHT. »UNSER SCHREIBZEUG ARBEITET MIT AN UNSEREN GEDANKEN. WANN WERDE ICH ES UEBER MEINE FINGER BRINGEN, EINEN LANGEN SATZ ZU DRÜCKEN. ——
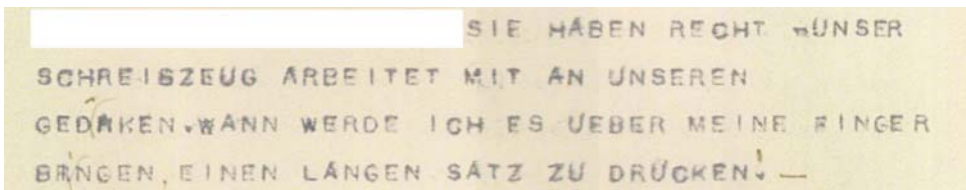
Figure 2: Nietzsche on typewriting.[36]

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[34] Edward Bradford Titchener, *Lectures on the Experimental Psychology of the Thought-Processes*, New York: Macmillan, 1909, pp. 176 ff.

[35] For a broader framework describing Titchener's position see my paper "Towards a Theory of Common-Sense Realism", in András Benedek and Ágnes Veszelszki (eds.), *In the Beginning was the Image – The Omnipresence of Pictures: Time, Truth, Tradition*, Frankfurt/M.: Peter Lang, 2016, pp. 17–27.

[36] Friedrich Nietzsche, *Schreibmaschinentexte*, ed. by Stephan Günzel und Rüdiger Schmidt-Grépály (2002), rev. 2nd ed., Bauhaus-Universität Weimar – Universitätsverlag, 2003, p. 18.

writing experiences, punched onto paper: "our writing equipment takes part in the forming of our thoughts" (see Figure 2). One thinks what one types, and one can type only words. So one unlearns to think in images, and denies the possibility of thinking in images.[37]

However, the 20th century witnessed not only the triumph and dominance of the typewriter, but also the rise of photography and film. Psychologist and art theorist Rudolf Arnheim, an early representative of the Gestalt school, was influenced by Titchener, but even more importantly by the new visual arts, and by the Bauhaus movement analyzing the significance of those arts – recall László Moholy-Nagy and György Kepes (incidentally, both of Hungarian origin). Arnheim's decisive book is his *Visual Thinking*.[38] Two central passages from that book: "What makes language so valuable for thinking … cannot be thinking in words. It must be the help that words lend to thinking while it operates in a more appropriate medium, such as visual imagery."[39] Earlier Arnheim relates images – mental images as well as drawings expressing them – to *gestures*, pointing out that in gestures the visual is intrinsically bound up with the motor, with "the kinesthetic experiences of pushing, pulling, advancing, obstructing".[40]

6. Gombrich vs. Goodman

In the history of the pictorial turn the role of Arnheim's arch-rival Ernst Gombrich is widely misunderstood. The two had, ulti-

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[37] For a more detailed exposition of the above, see the section "Denken mit der Schreibmaschine" [Thinking with a typewriter] of my Leipzig inaugural lecture "Wörter und Bilder" [Words and images], published in *Humboldt-Nachrichten – Berichte des Humboldt-Vereins Ungarn*, No. 29, December 2007, pp. 24–32, see online at http://www.humboldt.hu/sites/default/files/hn29_woerter_und_bilder.pdf or at https://www.academia.edu/27619274/Image_and_Text_2006_German_talk. Hungarian translation published in *Világosság*, 2007, no. 9, pp. 3–12, see online at http://www.vilagossag.hu/pdf/20071109200756.pdf.

[38] Cf. note 13 above.

[39] *Visual Thinking*, pp. 231 f., I have alluded to this passage on p. 255 above.

[40] *Ibid.*, p. 118.

mately, rather similar views.[41] And both were sharply opposed to Nelson Goodman's position, even if the latter believed that his point of departure was Gombrich's 1960 book *Art and Illusion*. Now while in that book the beginnings of what we can call Gombrich's philosophy of images are certainly present, it was a number of studies written in the 1960s and 1970s in which that philosophy was actually elaborated. I have no space here to list those studies, but cannot omit mentioning the essay "The Visual Image", written for a *Scientific American* 1972 special issue on communication, where Gombrich on the one hand argues for the joint exploitation of the media of word and image, but on the other arrives at the momentous formulation that the "real value of the image … is its capacity to convey information that cannot be coded in any other way". Also, 1972 brought Gombrich's first direct attack on Goodman.[42] The second, devastating, attack came six years later, with Gombrich's paper "Image and Code: Scope and Limits of Conventionalism in Pictorial Representation",[43] vindicating the common-sense idea of pictures as natural signs, and explicating the controversial concept of *resemblance* by that of *equivalence of response*.[44] As Gombrich here momentously puts it: "the images of Nature, at any rate, are not conventional signs, like the words of human language, but show a real visual resemblance, not only to our eyes or our culture but also birds or beasts".[45]

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[41] For details on this and the following see the chapter "Gombrich on Image and Time", in my volume *Meaning and Motoricity* (cf. note 4 above).

[42] E. H. Gombrich, "The 'What' and the 'How': Perspective Representation and the Phenomenal World", in Richard Rudner and Israel Scheffler (eds.), *Logic & Art: Essays in Honor of Nelson Goodman*, Indianapolis: Bobbs-Merrill, 1972.

[43] Delivered at a symposium in 1978, published in Wendy Steiner (ed.), *Image and Code*, Ann Arbor: University of Michigan Press, 1981.

[44] *Ibid*., pp. 11 and 17.

[45] *Ibid*., p. 21. This is the stance Arnheim refers to in his *Times Literary Supplement* review (29 October 1982) on Gombrich's collection *The Image and the Eye*, when he writes that here "Gombrich rises to the defence of the visual image and its inherent truthfulness, to which even animals respond – an image shaped by simplification and abstraction, to be sure, and by the conventions of pictorial styles, but nature's message nevertheless. … It is from this secure basis that Gombrich's future work should be able to proceed."

In contrast to Goodman, both Gombrich and Arnheim are epistemological realists. Let me quote two passages from Arnheim's essay "Inverted Perspective and the Axiom of Realism" (1972). He wants to make sure, Arnheim writes, that his position

> is not misunderstood to coincide with the relativistic contention that the choice of methods of representation is due entirely to the accidents of tradition. In the most extreme version of the relativistic approach, pictorial representation is said to have nothing intrinsically in common with the subjects it represents and therefore to rely on nothing better than an arbitrary agreement of the parties concerned.

Arnheim here inserts a reference to Goodman's *Languages of Art*,[46] and then continues:

> This trivially shocking challenge to beliefs taken as givens by the rest of the population is the direct opposite of what I meant to demonstrate. – … although we must realize that our continued commitment to a particular tradition of realistic picture-making has induced us to misinterpret other ways of portraying space, we are not left with the nihilistic conclusion that nothing but subjective preference ties representation to its models in nature.[47]

Also, let me cite a longer passage by Claire Golomb on how she sees relativism on the one hand, and Gombrich's relation to Goodman on the other:

> the notion of extreme relativism and of drawing as learning a language composed of arbitrary signs is not tenable. Authors frequently refer to E. H. Gombrich's view of art as a form of

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[46] The reference is to p. 15 of the Indianapolis: Bobbs-Merrill, 1968 first edition of Goodman's book.
[47] Rudolf Arnheim, *New Essays on the Psychology of Art*, Berkeley: University of California Press, 1986, pp. 183 f.

illusion practiced by artists who study the graphic conventions of other artists rather than learning their trade by observing nature… This, however, is only a partial reading of Gombrich's position. He rejects Nelson Goodman's notion of graphic symbols as arbitrary conventions and insists that there are limits to perceptual relativism. … The search for meaning and the ability to perceive meaningful relations is part of our biological inheritance. The visual environment, according to Gombrich, is not neutral; our survival is dependent on the recognition of meaningful features that elicit approach responses or impel us to withdraw. Unlike words, the images of nature are not conventional signs; they are a natural language designed to apprehend meanings. Representations are meaningful statements because they stand in a systematic relationship to the objects of reality for which they create a graphic equivalent...[48]

7. Wittgenstein's Philosophy of Pictures

I believe Goodman had, and still today has, a detrimental effect on the philosophy of images. It is in no small measure due to that effect that Wittgenstein scholarship, and this is the theme I will conclude the present "Postscript" with, is unable to come to terms with Wittgenstein as a philosopher of pictures. Let me just give one example.[49] In the history of Wittgenstein research the first study that actually had Wittgenstein's attempts at a theory of images as its subject was Søren Kjørup's "Wittgenstein and the Philosophy of Pictorial Languages", a talk given in 1980.[50] "Pictures", wrote Kjørup,

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[48] Claire Golomb, *The Child's Creation of a Pictorial World*, 2nd ed., Mahwah, New Jersey: Lawrence Erlbaum Associates, 2004, pp. 358 f.

[49] The following passages I am taking over from my 2010 essay "Image and Metaphor in the Philosophy of Wittgenstein", repr. in my volume *Meaning and Motoricity*.

[50] Søren Kjørup, "Wittgenstein and the Philosophy of Pictorial Languages", in *Wittgenstein – Aesthetics and Transcendental Philosophy*, edited by Kjell S. Johannessen and Tore Nordenstam, Vienna: Hölder-Pichler-Tempsky, 1981, pp. 159–173.

always played an important role in the philosophical thought of Ludwig Wittgenstein. ... Wittgenstein never went so far as to formulate an explicit philosophy of pictures or philosophy of pictorial languages in its own right. … But from his many asides on pictures and his many examples drawn from our use of and experience with pictures one does get a rather clear impression of his implicit conception of pictorial languages. … And at certain points he even discusses pictures so straightforwardly and extensively that we come very close to an explicit theory.[51]

In his paper, Kjørup gives serious consideration to Wittgenstein's attempts, in *Philosophical Investigation*, Part II, sect. xi, to come to terms with the fact that pictures actually *depict*, that they represent by natural resemblance. Wittgenstein, as Kjørup puts it, does not deny in the *Philosophical Investigations* "that there is a connection between pictorial objects and real ones"; on the contrary, he asserts that towards, say, a "picture-face" one in some respects stands as one does towards a human face. " 'I can study its expression, can react to it as to the expression of the human face. A child can talk to picture-men or picture-animals, can treat them as it treats dolls.' " Wittgenstein, Kjørup points out, "here writes about our very direct and live relation to pictures: 'When I see the picture of a galloping horse – do I merely *know* that this is the kind of movement meant? Is it superstition to think I *see* the horse galloping in the picture?' " Wittgenstein in fact "stresses the difference between really experiencing a picture and just 'reading' it, as we might say: 'If you see the drawing as such-and-such an animal, what I expect from you will be pretty different from what I expect when you merely know what it is meant to be.' " However, after having given due scrutiny to these remarks by Wittgenstein, Kjørup deems them to be misguided. By contrast, he embraces the Wittgensteinian approach according to which as a "point of departure for theorizing on pictures one should not take 'idle' pictures, but pictures in use". The philosopher of images whose ap-

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[51] *Ibid.*, p. 159.

proach is in accordance with what the later Wittgenstein actually was up to, surprises us Kjørup, is Nelson Goodman;[52] and what the later Wittgenstein was actually up to was the elaboration of a *use-theory of pictures*. These are ideas which today dominate the field.

Of the famous and seminal philosophers of the 20th century the two most influential are, without any possible doubt, Wittgenstein – and Martin Heidegger. Wittgenstein, as I tried to indicate above, was a philosopher of pictures quite as much as he was a philosopher of language. Heidegger provided a very brief but well-rounded and indeed brilliant philosophy of pictures – unbeknownst to mainstream Heidegger research – in his 1929 *Kant and the Problem of Metaphysics*.[53] Still, in contemporary philosophy, neither Wittgenstein nor Heidegger are regarded as figures who matter when it comes to the theory of the visual. As the present volume I trust convincingly demonstrates, in the real world, and in most of the humanities, the pictorial turn has actually happened. Philosophy, it appears, lags behind. The owl of Minerva, as so often before, takes her time before beginning her flight.

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[52] *Ibid.*, pp. 168, 171, 167 f. and 172.
[53] For a summary of Heidegger on pictures see pp. 18 f. in my volume *Meaning and Motoricity*.

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This volume convincingly demonstrates that after the temporary dominance of excessively verbal thinking in the age of the printed word, during the past decades a pictorial turn has actually happened – in the real world, in the sciences, and in most of the humanities. Human thinking is primordially visual.
In the course of human evolution it was the language of gestures, not verbal language, which introduced conceptual order into the episodic imagery of pre-linguistic thought. The idea of the primacy of the visual, beginning with Plato, is continuous through Aristotle to the British Empiricists in the 17th–18th centuries, and is today once more on the rise.

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