Essay

Untangling Photographic Manipulation: Exploring a Dual Concept and Its Societal Implications

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Abstract: In recent years, the pervasive presence of visual disinformation in the media and visual culture, propelled by technological advancements, has become an escalating concern. This article asserts the urgent need to revise the current conceptual framework for addressing this challenge. A significant hurdle is the ambiguity surrounding the very concept of manipulation. Two distinct concepts of manipulation coexist—one with moral implications and the other without. This article examines this conceptual discrepancy across academic cultures, identifying them as anchored, respectively, in the social sciences and humanities and in the natural sciences and medicine. It then analyzes how these two concepts are used in white papers and other policy documents that guide responses to visual disinformation from 2018 to 2021. The article further investigates the complexities of these manipulation concepts within photography and visual expression. By elucidating and questioning them, the article aims to enhance the framework for addressing visual manipulation, foster interdisciplinary collaboration, and enrich theories of camera-based imaging across various fields. Overall, this article highlights deficiencies in the current framework and strives to improve it, thereby aiding in tackling visual disinformation and fostering effective collaboration among stakeholders.

Keywords: visual disinformation; concepts of manipulation; camera-based information; visual culture; deepfake; cheap fake; photography; video; interdisciplinary conceptual work

1. Introduction

The advancement of camera technology and the integration of AI have revolutionized the technological landscape of photographic imagery. These advancements have ushered in transformative changes in the methodologies of capturing, processing, and generating images. Alongside these advancements, there has been a palpable surge in concerns about the credibility of camera-based images, spanning both photography and videography. This growing unease has been prompted by the increasing prevalence and potential implications of what is often categorized as photographic manipulation and visual misrepresentation (Harris 2021, p. 13378; Vaccari and Chadwick 2020, p. 2; Rini 2020; De Ruiter 2021; Langguth et al. 2021, p. 1).

Central to this growing concern is the emergence of deepfake technology and other AI-powered video techniques, often lauded as the forefront of contemporary photographic manipulation (Yadlin-Segal and Oppenheim 2021, p. 37).[1] Deepfake technology is referred to as "the current state-of-the-art in [...] image, video, and audio manipulation" (Dagar and Vishwakarma 2022, p. 219) and "the latest in a long line of techniques used to manipulate reality" (Farid 2022, p. 1). These innovations have sparked extensive discussions regarding their ethical, societal, and legal ramifications. These are crucial discussions. However, they are characterized by some conceptual challenges.

This article contends that the foundational conceptual framework crucial for discussing the cultural and societal challenge of visual disinformation grapples with fundamental issues that require profound consideration to address the escalating challenge effectively. A significant hurdle is the ambiguity surrounding the very concept of manipulation. Two distinct concepts of manipulation coexist—one with moral implications and the other

without. This article examines this conceptual discrepancy across academic cultures, identifying them as anchored, respectively, in the social sciences and humanities and in the natural sciences and medicine.

These two conceptions of manipulation are used interchangeably in photography, film, and video research. Some attempts have been made to introduce an analytical distinction, to which I shall return, but no conceptual distinction has been established either within the academic disciplines that work with audiovisual material or in the public debate. After examining this conceptual discrepancy across academic cultures, clarifying how the two terms are rooted in two heterogeneous but identifiable academic cultures (the social sciences and humanities on the one hand and the natural sciences and medicine on the other), and showing how the perceptions slide into each other within photography, film, and video, this article will examine how the two notions play out in white papers and similar policy documents that play a broader role in shaping responses to the cultural and societal challenges of visual disinformation.

For centuries, governments have used white papers to foster discussion and promulgate official political positions. The term white paper originated when government papers were coded by color to indicate distribution, with white designated for public access. In recent decades, the white paper genre has expanded to commercial areas, marketing, media organizations, education, religious organizations, and human rights groups (see, e.g., Thomson 2008). The genre is generally characterized by being an authoritative report or guide that often addresses issues and how to solve them. Thus, white papers are used in politics, business, and other fields to educate readers and help people to make decisions (SLS (Stanford Law School) 2015). The line between white papers and similar policy documents can be difficult to draw.[2] The important thing for the investigation here is that the reports examined are authoritative and address the relevant issues and how to solve them. I will use the terms report and white paper synonymously in this article.

White papers occupy an intermediary space between the popular and academic realms, presenting varied perspectives. Scholars from a variety of fields and academic cultures are enlisted to articulate challenges and potential responses in an accessible manner for non-academic stakeholders such as policymakers, other vested parties, and the general public. The significance of these reports lies in their role in shaping widely prevailing expert opinions. Positioned like this, these reports significantly influence the cultural and societal response mobilized to combat the challenge at hand.

This article rigorously scrutinizes a curated selection of reports on visual misinformation spanning 2018 to 2021. These responses involve diverse stakeholders including human rights groups, governmental entities, media organizations, NGOs, and private sector actors, all aiming to counter new forms of visual disinformation. The period from 2018 to 2021 signifies a prolific phase for these white papers. To the best of my knowledge, this rich and consequential material remains unexplored. Their prominence is underlined by the advent of deepfakes, which are variously defined but often tied to machine learning techniques and AI-generated imagery. Since 2022, these types of policy documents have broadened the perspective to a more general concern for AI-generated imagery that goes beyond integrating AI into camera technologies, the processing of camera-generated imagery, and post-processing, as in various types of deepfakes (face swaps and the like). In such contexts, semi-academic white papers and other policy documents (such as the EU's AI Act Proposal 2023 (European Union 2023)) discuss AI's importance for camera-based images with concepts such as manipulation. It is this concept of manipulation that is of interest here.

This article investigates how white papers address what is considered *manipulation* of video and photography in media, art, and popular culture. It highlights inherent conceptual shortcomings in these reports in addressing the manipulation of visual and audiovisual material. Notably, these reports often leave the concept of manipulation ambiguous, inadvertently exacerbating the very issues they aim to tackle.

Let me emphasize that this article is not about either deepfakes or visual disinformation as such. It examines white papers written on the occasion of the rise of deepfakes and with a societal concern for visual disinformation. This article discusses these policy documents to identify and understand how they use the term manipulation concerning camera-based images. As will be apparent from reviewing manipulation concepts across academic cultures, not all manipulation concepts refer to something morally or politically problematic. Thus, it becomes essential to understand when, where, and how manipulation may relate to visual disinformation or other societal challenges.

Reports were strategically chosen based on two criteria. Firstly, the reports concentrate on visual disinformation as a societal problem. Secondly, they specifically engage with the core visual material central to the cases. Many reports deliberate on the broader social challenges of visual disinformation without specifically discussing the image practices involved. Consequently, this study focuses on reports explicitly addressing image usage.

The scope of photographic manipulation in this context encompasses both still photography and video. Furthermore, it is important to acknowledge the significant role that audio plays in discussions related to disinformation, especially in the realm of video. While this article concentrates on the conceptual examination of photographic manipulation, our specific emphasis will remain on visual modes of expression.

Before taking a closer look at the white papers, the article will expand the perspective on manipulation to include research across various academic disciplines. We are now moving far beyond the research field of photography and other visual material. The purpose of such a broad-spectrum interdisciplinary conceptual work on manipulation is to better understand the complexities associated with this concept(s) across various areas for scholarly investigation. Hence, the objective is first to better grasp the inherent tensions within this concept of manipulation across academic disciplines, thereby enhancing the analytical framework for assessing reports on visual disinformation. This examination of the white papers then aims to demonstrate the implications of their understanding of the issue for our comprehension and the potential regulation of contemporary expressions in esthetics, culture, and politics within visual media culture. The interdisciplinary investigation of the concepts of manipulation and the close reading of the reports will also contribute to a better conceptual foundation for multidisciplinary collaboration within research on visual culture.

2. Two Conceptions of Manipulation

Dictionaries and various encyclopedias commonly provide two definitions for the term manipulation: 'doing something with your hands' or 'misleading someone'. The former is associated with something one does with an object, while the latter is something one does with people, opinions, politics, or actions. Only the latter appears as a moral concept.

Despite both conceptual categories being included in encyclopedic entries, this dualism is not reflected in the research literature, either within the natural sciences and medicine on the one hand or in the social sciences and humanities on the other. Authors tend to refer to either the one (Pettman 2007; Bovine 2015; Paris 2000; Mason 2018)[3] or the other (Coons and Weber 2014; Klenk 2022; Baron 2003; Ware 1981).[4] Only exceptionally is this distinction mentioned, and then just initially and without much elaboration before concentrating on one of them. I will briefly examine a selection of research articles that explicitly signal an awareness that there are in fact two diverse concepts that go under the same name of manipulation. Let us start at one end with what we may call a physiotherapeutic discourse.

In the article "Introduction to Manipulation" (Keir and Goats 1991), published in the *British Journal of Sports Medicine. Physiotherapy Modalities*, K.A.I. Keir and G.C. Goats underline that "Any discussion amongst manipulators [in the field of physiotherapy] is hampered by a vocabulary that means different things to different people, the gulf never greater than between the general public and the medically qualified" (Keir and Goats 1991, p. 221). The conceptual dualism in question is not only a conceptual subtlety but refers to different perceptions between two areas of society; one of these perceptions is prevalent in

everyday language while the other is part of an academic context, a profession, or a set of occupations; the domain in question is what they call "the medically qualified". It is also worth noting that the authors refer to conceptual challenges among the "manipulators" (i.e., those who manipulate bodies to achieve the aims of physical therapy), an expression usually not found in everyday language and which Teun A. van Dijk points out in a slightly different context is normally considered "a typical observer's category, e.g., of critical analysts, and not necessarily a participant category; few language users would call their own discourse 'manipulative'" (cf. van Dijk 2006, p. 360).[5] As we shall see, it is not the conception amongst "the medically qualified" that dominates current public discussions about photographic manipulation.

In the physiotherapeutic context that the authors Keir and Goats address, manipulation is an entirely legitimate activity; it is an integral part of the practice of the profession. In the selection of research articles examined here, which discuss both manipulation concepts, this article places its research according to a manipulation concept that seems most widespread in the natural sciences and medicine. However, they do not contrast their, in principle, value-neutral concept of manipulation with the moral concept widespread in the social sciences and humanities and that we know more generally from everyday language. Instead, they contrast the therapeutic occupations' manipulation concept with a more limited and by-all-means moral manipulation concept, which they associate with laypeople misunderstandings. In both cases, they refer to the Oxford Dictionary for definitions: "Perhaps the most accurate description of manipulation is given by the Oxford Dictionary: 'to work with the hands, to handle or manage'. Many laypeople erroneously believe that the term implies the use of fast jerking techniques, and carries with it the stigma of 'quackery' or connotations of 'putting bones back' by the use of large amounts of ill-advised force and small amounts of brainpower" (Keir and Goats 1991, p. 221). In contrast to this perspective, Keir and Goats emphasize that practitioners who employ manual techniques in their profession utilize the term "manipulation" to encompass a broad spectrum of procedures, ranging from gentle to vigorous applications, including both low- and high-velocity techniques (Keir and Goats 1991, p. 221). The alleged misconceptions held by laypeople regarding the concept of manipulation within the field of physiotherapy appear to span from concerns about excessive and unjustified force to accusations of fraud or quackery.

Given this backdrop, it is noteworthy that the Keir and Goats article does not delineate a more comprehensive concept of manipulation that extends beyond laypeople's misinterpretations of the medical term. One might reasonably argue that such a broader understanding of manipulation is prevalent in everyday language. As the critical discourse analyst Teun A. van Dijk points out, "In everyday usage, the concept of manipulation has negative associations—manipulation is bad—because such a practice violates social norms" (van Dijk 2006, p. 360). This everyday conception of manipulation also has its academic counterpart. As we shall see below, it is most clearly found in social studies, psychology, pedagogy, and, more generally, the social sciences and humanities.

Among academic texts that pertain to this second concept of manipulation, a few contrast it with the aforementioned term, which is often described as value-neutral and rooted in medicine and natural science. Teun A. van Dijk is among these scholars. In his article "Discourse and Manipulation" (van Dijk 2006), he distinguishes between two categories of concepts related to manipulation before setting one aside and concentrating on the other: "In this article, I do not deal with the form of 'manipulation' used in physics, computer science, medicine, or therapy, among other uses, more or less directly derived from the etymological meaning of 'manipulation' as moving things by one's hands". In contrast to such a conceptual understanding of the term, van Dijk emphasizes that he works with what he calls communicative or symbolic forms of manipulation, where manipulation is a form of interaction. This occurs, for instance, when politicians or the media manipulate voters or readers "through some kind of discursive influence" (van Dijk 2006, p. 360).

In the now classic article "Manipulation" from 1978, the philosopher Joel Rudinow states that, "The sense of 'manipulate' with which I am concerned is, at least originally, a metaphor, though by now it is a dead one" (Rudinow 1978, p. 339). He contrasts this "interpersonal manipulation" to what he considers "the nonmetaphorical and perhaps original sense of 'manipulate'" (Rudinow 1978, p. 339), the previously mentioned meaning of the term that is widespread in medicine and the natural sciences. Michael Kligman and Charles M. Culver further discuss Rudinow's notion of interpersonal manipulation in contrast to this older, "nonmetaphorical" sense of the concept. Interestingly, they both have medical backgrounds, are positioned in psychiatry, and published the article "An analysis of interpersonal manipulation" (Kligman and Culver 1992) together in *The Journal of Medicine and Philosophy*. This could indicate a need for a particular conceptual balancing work between the two different notions of manipulation: the non-moral conception from medicine and the natural sciences and the moral conception found in the research fields that study interpersonal manipulation.

It is instructive to begin by considering what the authors refer to as "the straightforward, value-neutral, and perhaps original sense of the term manipulation", a distinction they emphasize, citing Rudinow (1978, p. 339) and his concept of a nonmetaphorical use of manipulation. They point out that, in its most fundamental sense, manipulation involves the manual operation of objects with skill, aligning perfectly with the etymological definitions found in dictionaries. Additionally, manipulation is occasionally employed to describe "skillful utilization" or "skillful adjustment". According to the authors, the former implies that "the manipulator" has a specific goal or project in mind, which guides their utilization of the system being manipulated. Conversely, the latter suggests that "the system itself possesses a certain momentum or inertia to move towards some goal, which the manipulator is altering" through skillful adjustments. These distinctions hold significance as we later explore the realm of photographic manipulation.

Before embarking on the form of interpersonal manipulation that their article primarily has as its theme, Kligman and Culver emphasize, far more clearly than the others in this corpus of research articles briefly comparing manipulation concepts, how there is both continuity and a break between the two concepts of manipulation: "Many of the connotative features associated with nonmetaphorical usage, such as the implication of high skill or nuanced knowledge, clearly extend into the realm of interpersonal interactions. However, other characteristics, notably deception and the connotation of moral impropriety, are novel within the interpersonal context" (Kligman and Culver 1992, p. 179).

The professor of translation studies Jorge Díaz-Cintas also discusses the relationship between the two concepts of manipulation. In "Clearing the Smoke to See the Screen: Ideological Manipulation in Audiovisual Translation" (Díaz-Cintas 2012), he proposes distinguishing between a "technical" and "ideological" concept of manipulation (p. 284), a potentially suggestive distinction for discussions of photographic and other visual material. Díaz-Cintas refers to the etymological meaning of manipulation as managing, working, or treating by manual or mechanical means, as well as to more recent dictionary definitions that similarly describe handling or controlling a tool, mechanism, or information skillfully. Both of these definitions fall under what he calls a technical concept of manipulation and correspond to what we have previously anchored in medicine and the natural sciences. He mentions, almost in passing, that this "somewhat matter-of-fact definition of the concept" may be difficult to justify in fields like literary translation (p. 284). Yet, it can be appropriately used in *audiovisual* translation to refer to those instances where "changes and modifications to the original text are incorporated because of technical considerations" (Díaz-Cintas 2012, p. 284). Díaz-Cintas discusses the "need to change the source text in order to respect lip-sync in dubbing or having to condense it so that it will fit in a given subtitle" as examples of what he proposes to call "necessary technical manipulation". He emphasizes that "In principle, these textual dislocations are compulsory in the professional practice of AVT [audiovisual translation], can be justified from a technical perspective and

should not entail a significant, deliberate change of meaning that would contradict the nature of the source program" (p. 284).

It is worth noting that this concept of technical manipulation comes with an imperative, a requirement that technical limitations justify it. It must not involve a significant and deliberate change in meaning. The author emphasizes that, in reality, such technical limitations can be "misconstrued and taken advantage of quite openly, as has been the case in censorial regimes, both in the past and nowadays, by using them as a shield to justify certain unpalatable solutions" (Díaz-Cintas 2012, p. 285).

Díaz-Cintas contrasts what he accepts as "necessary technical manipulation" with what he calls "ideological manipulation", which he defines, referring to the Oxford English Dictionary, as "to manage by (esp. unfair) dexterous contrivance or influence" or "control or influence (a person or situation) cleverly or unscrupulously" (p. 285). The negative connotations of "the adjective unfair, the substantive contrivance, and the adverb unscrupulously are the key to understanding this action, at least by some, as an unwelcome and undesirable interference in any given process", he adds. Díaz-Cintas emphasizes that the concept of manipulation in his contribution corresponds with this second definition: "It is this latter meaning of ideological manipulation, as opposed to technical manipulation, that runs throughout this paper" (Díaz-Cintas 2012, p. 285). We have anchored this second and, indeed, moral manipulation concept academically in the social sciences and the humanities.

Díaz-Cintas' suggested distinction between "technical manipulation" and "ideological manipulation" in audiovisual translations is a promising analytical discrepancy for discussing the complexity of manipulation more generally in photography, video, and film. A few years later, Zsolt Bátori (2018) proposed a similar distinction between "photographic manipulation" and "photographic deception", where the former refers to various types of technical adjustments of image properties (p. 38) while the latter concerns whether the photograph either in its composition or its context (including caption) "cause us to form false beliefs about the depicted scene" (p. 45). For both Díaz-Cintas and Bátori, it is thus an analytical rather than an ontological distinction: not all technical manipulations are deceptive; not all deceptive use of photography involves technical manipulation.

Similar distinctions have been made throughout the history of photography, but it has often been discussed as a matter of degree. Removing red eyes in a photographic portrait may represent a simple example of technical manipulation not considered deceptive (Fineman 2012, p. 7; see also Bátori 2018, p. 38). Díaz-Cintas also refers to such viewpoints when he points out the need to change a moving image to respect lip-sync in dubbing. In early photo history, however, the extensive manipulation of photographic material has been accepted, especially when the justification has been technical. In a book-length *Manual of Photographic Manipulations* from 1858 (Price 1858), Lake Price explains a comprehensive set of tips and tricks for technically manipulating various stages and dimensions of the process to produce photographic images. The intention is not to mislead anyone but to influence the photographic process to obtain the desired result. Price calls this Photographic Manipulation (and with this, uses the same notion as Bátori 160 years later). For both of them, it is about technical manipulation, i.e., the manipulation of a physical object or a technical process, a concept of manipulation we recognize from physiotherapy, medicine, and the natural sciences.

Landscape photography of the 19th century may serve as an example of this. In the 1840s and 1850s, photographic emulsions were much more sensitive to blue and violet light than other colors on the spectrum. Therefore, a blue sky in a photograph almost always seemed mottled and overexposed. The solution was to create two separate negatives to overcome the problem, one exposed for the landscape, the other for the sky, and print them on a single sheet (see Fineman 2012, pp. 45–49). Of course, some viewers may have considered this picture a snapshot, which would be misleading. However, such a technical move would be to correct the new imaging apparatus's technical flaws or compensate for its perceived limitations rather than manipulate the audience. It is reasonable to regard this as a technical but not a deceptive form of manipulation.

The possibility of perceiving 19th century landscape photography as a snapshot rather than a composite of two exposures may also illustrate that the distinction between technical and deceptive manipulation is *analytical* rather than ontological. It is not a distinction between two types of manipulation but an analytical distinction that lends itself to discussing whether or not we are facing change that should be assessed as misleading. Photographs have always been technically manipulated or processed for many different reasons. A critical first step in dealing with the complex of photographic manipulation will be to distinguish this concept of technical manipulation from an idea of manipulation as morally problematic. After we have examined the white papers more closely, we will nuance and problematize both these terms.

In the following, I will use "technical manipulation" for technical modification or alteration. I prefer Díaz-Cintas' term to Bátori's notion of "photographic manipulation" for two reasons. Firstly, "photographic manipulation" is used in everyday language as problematic manipulation. At the same time, it contains all the ambiguities that I, like Bátori (2018), seek to untangle. Therefore, I will use "photographic manipulation" to describe the problem complex we are discussing here. Moreover, "technical manipulation" will align with Kligman and Culver's (1992) characterization of a straightforward, value-neutral term of manipulation involving the manual operation of objects with high skill or nuanced knowledge rooted in medicine and the natural sciences. The term is general and applies not only to the technical manipulation of photography, video, and film but is relevant in these fields. This way, we may activate a more informed dialog across academic cultures.

The notion "technical" will generally refer to "techne" (from Greek, tékhnē), meaning art, skill, craft, or the way, manner, or means by which a thing is gained. Instead of Díaz-Cintas' concept of "ideological manipulation", I would suggest "deceptive manipulation" inspired by Kligman and Culver's description of interpersonal manipulation as characterized by deception and the connotation of moral impropriety. "Deceptive manipulation" is also a notion that Bátori uses interchangeably with "photographic deception". Again, I would argue that it may be helpful that "deceptive manipulation" is a notion that goes beyond the photographic field to other research areas while also being highly relevant to the challenges in photography, film, and video. I prefer "deceptive manipulation" to "ideological manipulation" for several reasons. Firstly, the latter term potentially accentuates a surplus focus on a meticulously structured array of beliefs, particularly in political convictions upon which individuals, parties, or even nations predicate their actions. It is pertinent to note that interpersonal manipulation can also manifest on an *individual* scale, where the underlying mindset need not be thoroughly formulated or systematic in that particular sense. The notion of ideological manipulation is then less effective. On the other hand, within photography, there remains a legitimate need for a vocabulary that encapsulates the manipulation of perceptions at a socio-cultural stratum. This facet is one that the concept of ideology inherently embraces. At the same time, we need a manipulation term that can be used about photographic images and videos utilized to manipulate people's feelings, perceptions, or actions. In such cases, deceptive manipulation could be more appropriate. Regardless of which dimension of moral manipulation one wishes to emphasize, it is critical to be aware that this does not coincide with the concept of manipulation most widespread in medicine and the natural sciences. Instead, it is a general manipulation term in everyday language, social sciences, and the humanities. Although this conceptual disparity between different academic cultures presents some challenges, it can be used as an analytical distinction to help us better understand some societal problems concerning visual disinformation and collaborate better across academic specializations to help solve them. This simple distinction between two manipulation concepts will be considered later in this article where both concepts will be nuanced, criticized, and challenged. At the current stage of the argument, however, the purpose is to provide an interdisciplinary anchoring to the heterogeneous concept of manipulation that abounds in the public and is expressed in the critical policy documents on visual disinformation.

3. Notions of Manipulation in White Papers on Visual Disinformation

All the white papers I have examined employ a concept of manipulation. Still, none seem to be aware of the conceptual duality across different academic cultures, even though many of the reports are written by an academically heterogeneous team of authors from both sides of the divide between natural sciences and the social sciences and the humanities. Most reports have an unclear idea of manipulation. All the reports in the selection discuss the manipulation of images (and sounds). This makes it possible to expect a technical concept of manipulation. All the reports also have a framework in which visual disinformation is regarded as a social problem, which makes it reasonable to expect that they may also have a concept of manipulation that is not considered value-neutral but may indicate what we have called "deceptive manipulation".

The question is how they relate to a technical and in principle value-neutral concept of manipulation on the one hand and a moral concept of misleading perception, information, and meaning on the other. One could imagine that the difference could be described using different terms, or that an awareness of the distinction could emerge from the context. One could also imagine that they limited their material to exclusively deal with cases of deception. The specific question is whether the reports indicate an awareness that technical manipulation does not necessarily involve deception, and vice versa.

Let me first look at some of the pioneers in the field, WITNESS's report *Mal-uses of AI-generated Synthetic Media and Deepfakes* (WITNESS/First Draft 2018) and Britt Paris and Joan Donovan's 2019 report *Deepfakes and Cheap Fakes*.

In 2018, the human rights organization WITNESS published the white paper *Mal-uses of AI-generated Synthetic Media and Deepfakes* in collaboration with the nonprofit organization First Draft. The report summarizes discussions from a 11 June 2018 summit involving multiple AI and media experts, such as technologists, machine learning specialists, academics (from various disciplines, including economics), human rights researchers, and journalists. It is a comprehensive and thorough pioneering work that also includes recommendations for various actors in the fight against what they call "visual information distortion" (p. 9).[6] They suggest useful analytical distinctions between the three different types of information disorder: mis-, dis-, and malinformation, where the term misinformation describes unintentional errors and imprecise indications, such as of time and place; disinformation indicates intentionally false information with the intent to harm; and where malinformation is accurate but private information published to harm (e.g., revenge porn) (p. 10).

This 35-page report uses the term "image manipulation" explicitly throughout the piece. Sometimes it may seem a limited notion of technical manipulation (for example, in pages 3, 7, and 12), but, in general, manipulation is referred to as part of a practice of disinformation. The report also uses the notion of manipulation about interpersonal manipulation, for example, that local politicians are manipulated (p. 13) or that the public or individuals are manipulated to commit rights violations (p. 15). In addition, this report uses the notion of "manipulated content" (pp. 10, 26), a notoriously unclear term, as "content" may refer to varying phenomena such as matter, form, or meaning. Moreover, this report claims that "most images are altered" and that computational photography, by definition, includes image manipulation (p. 26), which seems to indicate a basic conception of technical manipulation as intrinsic to the photographic apparatus. Consequently, it becomes unclear when this report's different meanings of manipulation are relevant.

The aim here is not to critique this report or any others, but rather to pinpoint certain foundational conceptual challenges. This effort is taken to move ahead in this highly complex field, in which WITNESS and First Draft have played and continue to play crucial roles as some of our most significant contributors.

Data & Society is an independent nonprofit research organization. In 2019, they published *Deepfakes and Cheap Fakes: The Manipulation of Audio and Visual Evidence*, an approximately 50-page report written by Britt Paris and Joan Donovan. This widely referenced white paper uses the term "AV manipulation" throughout. The title indicates a particular focus on manipulating audio and visual *evidence*. Nevertheless, little attention is

given to evidence as such in this report. On the other hand, it explains its basic view of the conditions for something to be considered evidence. This basic statement is a quality of this report that lacks parallels and which we will briefly explain because it is crucial for the whole discussion about photographic manipulation and visual disinformation. This report explicitly emphasizes that there is no simple connection between audiovisual material and evidence. Consequently, there is also no simple connection between manipulating audiovisual material and manipulating evidence. On the contrary, the report emphasizes that "history shows that evidence does not speak for itself. That is, it is not simply the representational fidelity of media that causes it to function as evidence" (p. 22).

Furthermore, the report points out that through "reviewing the history of visual evidence, it becomes clear that the relationship between media and truth has never been stable. There has always been a politics of evidence around audiovisual media—how evidence changes and is changed by its existence in cultural, social, and political structures" (p. 17). The report says that with the development of deepfake technology, one may obtain a false impression of these mechanisms: "[...] what coverage of this deepfake phenomenon often misses is that the 'truth' of AV content has never been stable—truth is socially, politically, and culturally determined" (p. 6). This insight can be missed in the other white papers focusing on photographic manipulation in the light of visual disinformation. Paris and Donovan emphasize one more thing in this connection that is worth noting: One must be particularly attentive in cases where what we here call the technical manipulation of audiovisual material has been, is, or is likely to be considered manipulation of evidence. Problems arise, the authors stress, "when these techniques are used to create works that are interpreted as evidence. When that happens, despite the techniques or intentions behind production, manipulated media becomes a tool for changing or maintaining the distribution of power" (p. 16).

However, the report does not go into such cases or scenarios. In contrast, they develop what they call "THE DEEPFAKES/CHEAP FAKES SPECTRUM", a table which, according to the authors, "charts specific examples of audiovisual (AV) manipulation that illustrate how deepfakes and cheap fakes differ in technical sophistication, barriers to entry, and techniques" (pp. 10–11) and which the rest of the report concretizes and exemplifies (Figure 1). This spectrum is fundamentally ambiguous when it comes to the conception of manipulation. We shall, therefore, take a closer look at what is characterized as audiovisual manipulation within this very central table.

On the left side of the table, we find deepfakes, which, when the report was published (2019), were considered technically and economically challenging to access. On the way to the opposite pole, we find what they call cheap fakes, characterized as "forms of AV manipulation [which] rely on different software, some of which is cheap to run, free to download, and easy to use" (p. 11). The mapping indicates a technical notion of manipulation. Admittedly, on the far right of the table, we find techniques for manipulation that do not involve the technical processing of the image material itself, such as mislabeling footage or using lookalike stand-ins. Some may argue that photographic images are rarely published without a caption and that the caption can thus be regarded as part of the image; an altered caption could therefore be viewed as a form of technical manipulation. Referring to a changed caption as "mislabeling" nevertheless points in the direction of an intention, a purpose, or an effect: one that manipulates statements, expressions, ideas, or perceptions. With terms from WITNESS, it could be "mis-information" if it was unintentional errors and imprecise indications of time and place, for example, or "dis-information" in cases of intentionally false information created with the intent to harm (WITNESS/First Draft 2018, p. 10). However, if we talk about mislabeling in terms of manipulation, we must have a concept of deceptive manipulation (Kligman and Culver 1992; Bátori 2018). It seems more difficult to argue that using lookalike stand-ins can be considered a form of technical manipulation. Depending on the context and purpose, however, it may be part of what WITNESS refers to as "mal-information", that is, accurate but private information

published to harm (e.g., revenge porn) (p. 10) and used for interpersonal (Rudinow 1978) and ideological manipulation (Díaz-Cintas 2012).
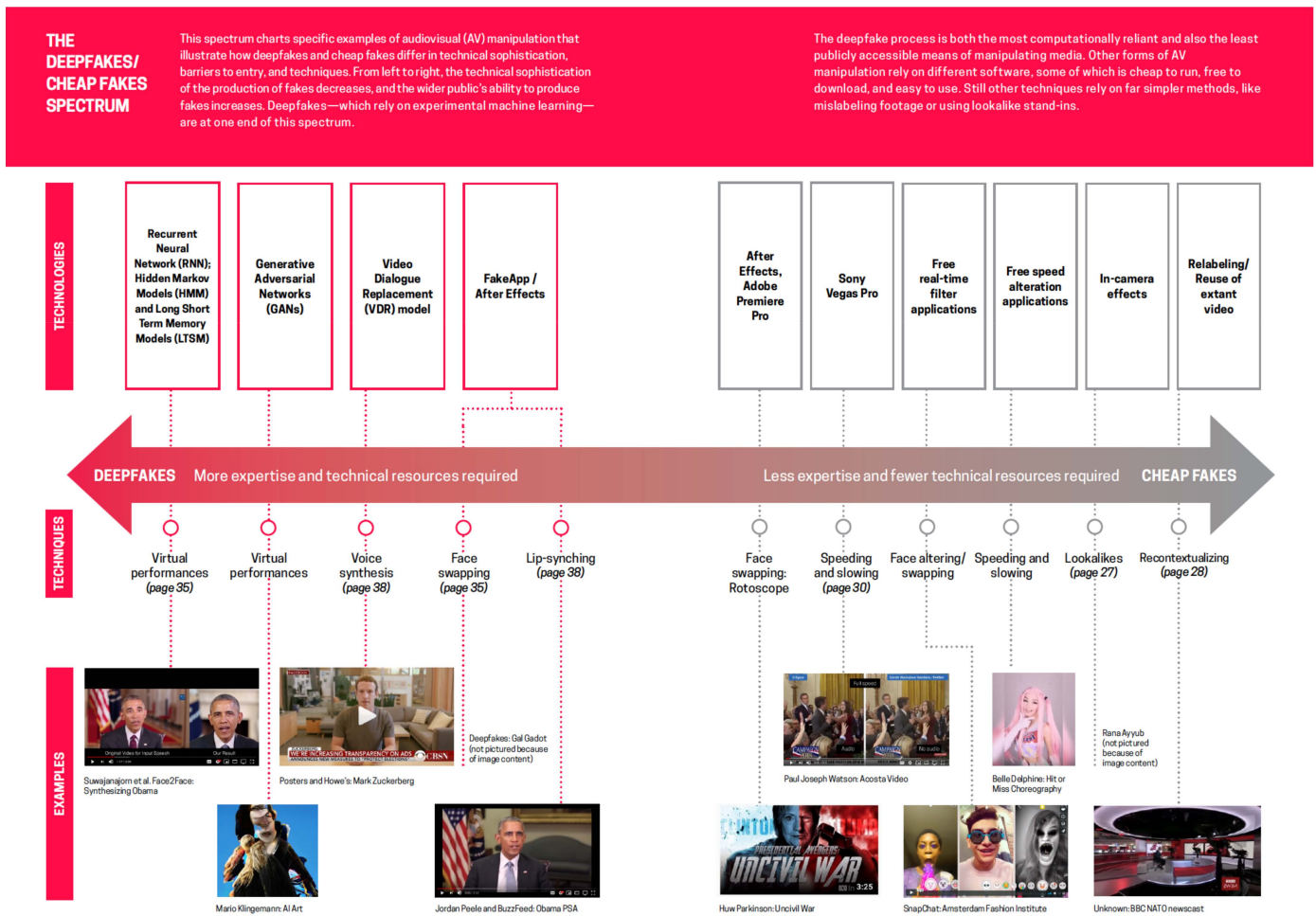

Figure 1. "The Deepfakes/Cheap Fakes Spectrum" is from Deepfakes and Cheap Fakes: The Manipulation of Audio and Visual Evidence (Paris and Donovan 2019, pp. 10–11), courtesy of Data & Society Research Institute.

It is, of course, no surprise that there are examples of deceptive manipulation in this model. The framework for the entire report is visual disinformation, and there are several cases where the term manipulation is used for what we here call deceptive manipulation. The authors write, for example, that "people are able to manipulate truth with deepfakes and cheap fakes alike" (p. 6) and that "media creators can easily manipulate an audience's interpretations" (p. 15). AV manipulation is thus not just the technical manipulation of audiovisual material in this report. It is also deceptive manipulation. However, the spectrum outlined from deepfakes to cheap fakes is a technical spectrum, that is, except for misleading captions and the use of lookalikes. We will now take a closer look at the empirical examples given along this spectrum to better grasp the challenges we face when discussing photographic manipulation and visual disinformation based on an unreflected concept of technical manipulation.

The empirical examples are striking when looking at the technically distributed spectrum of audiovisual manipulations. Of the five most technically advanced technical manipulations, four are what I would call educational videos or art. It concerns "Synthesizing Obama" as well as an AI artwork of Mario Klingemann as examples of Virtual Performances, Bill Posters and Daniel Howe's "Mark Zuckerberg" exemplifying Voice Synthesis, and Jordan Peele's "Obama" as an example of Lip-Synching. None of these can be charac-

terized as disinformation or deceptive manipulation, that is, manipulative representation of empirical events, thoughts, or opinions. The fifth example on this left side of the table is an example of involuntary porn with the help of Face Swapping, which clearly has societal costs and can also be perceived as manipulation of people's perceptions.[7] In a report centered on audiovisual manipulation within the context of visual disinformation, it is noteworthy that a very limited number of examples of technically advanced audiovisual manipulation can be deemed as potentially deceptive. It is plausible that there were few empirical instances of sophisticated technical manipulation in 2019, leading to references to artistic and educational examples. Typically, these examples would not be classified as disinformation; instead, they serve to highlight and sometimes educate the public about the technical possibilities, including those related to disinformation. One might speculate whether didactic and artistic examples were chosen due to the absence of empirical cases of deceptive manipulation. However, this explanation appears inadequate, as we will later explore the perplexing selection of examples at the simpler end of the spectrum as well.

On the part of the technical manipulation spectrum that requires less expertise and fewer technical resources, we find six examples, among them a political satire (Huw Parkingson's "Uncivil War"), a controversial social media profile (Belle Delphine) that speeds up the sound, and an activist SnapChat campaign to put animal welfare on the agenda. The latter may disrupt users' daily social media experience but can hardly be perceived as disinformation or deceptive manipulation. Admittedly, we also find Paul Joseph Watson's misleading video of CNN's Jim Acosta at a 2018 White House press briefing wrongly giving the impression that Acosta had behaved aggressively towards an intern. The case of the Indian journalist Rana Ayyub who, according to Paris and Donovan, was exposed to a lookalike porn video is also included.[8] A falsified BBC report presenting a false story of nuclear escalation between NATO and Russia is included as an example of recontextualization (although, strictly speaking, it seems more like two independent cases put together so that they wrongly seem to be connected).

Consistent with all the reports incorporated in this study, the rationale for this white paper is visual disinformation. However, the clarity of the project is compromised due to their establishment of a spectrum ranging from intricate to uncomplicated technical manipulation, alongside empirical instances drawn from the realms of art and entertainment. By introducing a conceptual differentiation between technical and deceptive manipulation, we would enhance the clarity of communication regarding the absence of an automatic transition from technical manipulation to deceptive manipulation.

By introducing a conceptual distinction between technical and deceptive manipulation, we may improve the analysis of the challenge and follow up on the fundamental insight that is otherwise communicated very clearly in this report, namely that there is no automatic transition from technical manipulation to deceptive manipulation, a perspective that often goes unaddressed in numerous of the other reports. Furthermore, it would aid in safeguarding against the implementation of political or technical measures targeted at technical manipulation before ensuring a focus on deceptive manipulation. This step is imperative to avoid unintended consequences and incursions into domains such as art, entertainment, fiction, satire, or social criticism.

September 2019 seems to have been a very productive month for visual disinformation white papers. In addition to the much-quoted report from Data & Society (Paris and Donovan 2019), two other relevant white papers were published, which will be briefly commented on here: *The State of Deepfakes: Landscape, Threats, and Impact* (Ajder et al. 2019) from the Amsterdam-based business company Deeptrace, and *Deepfakes and Audio-visual Disinformation* from The Center for Data Ethics and Innovation (CDEI) in the UK.

Deeptrace, a private company that changed its name to Sensity in 2020, offers services and solutions in cybersecurity. The report, *The State of Deepfakes: Landscape, Threats, and Impact*, is perhaps most interesting in its emphasis on involuntary deepfake pornography and what they call the commodification of deepfakes. It does not have the same thorough explanation of its theoretical foundation as the report from Data & Society, but seems

to lean on the pioneering work of WITNESS. The authors of the report are aware that deepfake technology can not only be used for disinformation, fraud, and involuntary porn but also satire and art. The term manipulation is mainly used for technical manipulation without specifying this. It also uses the ambiguous term "manipulated content" (p. 11) and refers to the danger that deepfakes can be used in attempts to manipulate elections (p. 9). There are, in and of themselves, and in contrast to the report from Data & Society, no significant ambiguities in the empirical examples given in this report. But it is just as difficult to use this report to analyze and understand the relationship between technically manipulated images and manipulated opinions or election results. And this is the challenge I am particularly concerned with here.

The Centre for Data Ethics and Innovation (CDEI) is an advisory body under the UK Government's Department for Digital Culture, Media and Sport. Their task is to "connect policymakers, industry, civil society and the public to develop the right governance regime for data-driven technologies" (UK Government n.d.). *Deepfakes and Audio-visual Disinformation* was published in a series of briefing papers to "improve public understanding of topical issues related to the development and deployment of AI" (Centre for Data Ethics and Innovation 2019, Foreword).[9]

CDEI also uses the term manipulation primarily for what I propose to call technical manipulation; at least, this applies as long as they discuss deepfake technology. The report notes that this technology can also be used for good purposes and mentions, in particular, the film industry, which has long used "visual and audio manipulation tools in post-production" (p. 12). They are, therefore, concerned that attempts to legislate against deepfakes should not affect what they refer to as "beneficial uses of visual and audio manipulation" (p. 19). As soon as they include more straightforward technical manipulations in the discussion, which they call "shallowfakes" (p. 2), an alternative term for what many after Paris and Donovan call "cheap fakes", it is as if they have forgotten that one can technically manipulate AV material for many purposes, not just fraud and deceptive manipulation (see for example, p. 12). The very same mechanism seems to work in the 2020 report from Sentinel; this report also primarily has a technical manipulation term, although there are cases where technical manipulation also entails manipulating people's actions (Tammekänd et al. 2020, p. 55) or democratic processes (p. 69). The report emphasizes that deepfakes can be used for good purposes (Tammekänd et al. 2020, pp. 60–61). However, as soon as one talks about "cheap fakes", it is as if the difference between technical modifications and the effects or purposes of such modifications are ignored: Cheap fakes are claimed to be "equally insidious as they alter facts or remove content, resulting in a completely different action or narrative" (p. 39).

Sentinel is a Tallinn-based company working in partnership with the Estonian Government to protect democracies from disinformation campaigns. The Sentinel report has been titled *Deepfakes 2020: The Tipping Point*. It comprises 91 colorful and spacious pages written by Johannes Tammekänd, John Thomas, and Kristjan Peterson. In sharp contrast to the Deeptrace report discussed above (Ajder et al. 2019), Sentinel (Tammekänd et al. 2020) claims that the majority of deepfakes online are not pornographic, but rather entertainment (Tammekänd et al. 2020, p. 10).[10] Some may object that porn can also be a form of entertainment. However, the involuntary porn the reports refer to here is perhaps mainly designed to harm, threaten, or undermine other people. That aside, the emphasis on deepfakes' entertainment function is refreshing. Regarding "Countering Deepfakes" (pp. 62–70), the report distinguishes between technical, policy, and educational measures. They emphasize that education in this area is crucial. However, there is a tendency for the technical measures to expect that technical aids can be used to identify "harmful deepfakes" (p. 69) and that one is willing to support social media policies "to help detect and ban the use of deepfakes and other forms of manipulated media", as if technically manipulated images were tantamount to harmful content. This is remarkable in a report that underlines the amount of deepfake-based entertainment.

The somewhat atypical white paper *DEEP FAKERY—An Action Plan* (Chu et al. 2020) proposes a distinction between "deep fakery" and "deep fake". The latter refers to a specific technology and the result of this technology, deepfake videos, regardless of whether they are harmful, artistic, scientific or even therapeutic (Chu et al. 2020, p. 1). Deepfakery, on the other hand, is proposed as a term for "a specific socio-technical configuration in which deepfake technology is used for malicious or anti-social purposes" (Chu et al. 2020, p. 1). The term manipulation is used in this report only in connection with the description of deepfake technology. Different from the other reports in the selection, this white paper does not slip between the two notions of manipulation.[11] It concentrates on what it calls deepfakery, and fakery is another unclear term that should be discussed and clarified in the context of the fight against visual disinformation, without it being a topic here. That it does not slide between a technical and a deceptive manipulation term is striking, not least because the latter is allegedly dominant in everyday language. It may then be informative to know that this white paper results from a two-day workshop hosted by the Institute for Pure and Applied Mathematics (IPAM) at UCLA entitled *Deep Fakery: Mathematical, Cryptographic, Social and Legal Perspectives* (held on the 15 and 16 November 2019). It is, therefore, perhaps not surprising that this report seems to link to the concept of manipulation used in medicine and the natural sciences and is more or less directly derived from the etymological meaning of manipulation as moving things by one's hands rather than what are considered communicative or symbolic forms of manipulation as a form of interaction, such as politicians or the media manipulating voters or readers through some discursive influence (see van Dijk 2006, p. 360), which we will call here deceptive manipulation.

The last two reports in the selection are from 2021. A comprehensive report of over one hundred pages, *Tackling Deepfakes in European Policy*, was commissioned by the Secretariat of the European Parliament (van Huijstee et al. 2021). In this text, the term manipulation is used in many ways: about face filters in social media (p. III), about "the manipulation of social media channels by trolls or social bots" (p. III), news media manipulation (p. IV), manipulation of public opinion (p. VIII), manipulation of democratic elections (pp. IV, VIII), manipulated court evidence (p. IV), and stock price manipulation (p. IV). A simple distinction between the manipulation of images (technical manipulation) and the manipulation of people (deceptive manipulation) will hardly be sufficient, something we will return to below. But the diversity in this thorough and orderly report mainly revolves around the latter, about the manipulation that harms society and democracy, the economy, and the legal system. The starting point for all this harmful potential is a more or less implicit concept of technical manipulation (for example, p. I), but how this contributes to all the other forms of manipulation is not clearly expressed. The first step will be to introduce a concept of technical manipulation to explain how this can be linked to the societal challenges one faces.

Finally, on the eve of 2021, came the white paper *Just Joking! Deepfakes, Satire, and the Politics of Synthetic Media* (Ajder and Glick 2021). It was published in a continuing collaboration between WITNESS and the Co-Creation Studio at MIT Open Documentary Lab (ODL). WITNESS, the pioneers from 2018, took the next step: This is still a white paper about deepfakes where visual disinformation is the framework. But the topic is more limited: they discuss and problematize how deepfakes are used, misused, or suspected of being misused in satire, humor, or social criticism. The term manipulation is utilized in many ways, some of which can be easily classified as manipulation of people (including psychological manipulation), while others may refer to technical manipulation without this being clear. The reader must make sense of the conception of manipulation based on the context. The report also uses the notoriously unclear term 'media manipulation', which needs more than a simple analytical distinction between technical and deceptive manipulation to be untangled.

Nevertheless, this last report points to a challenge associated with improving the ability to distinguish between satirical content and malicious manipulation masquerading as

humor (p. 46). It also explicitly asks how democratic societies can avoid the weaponization of "deepfake panic" and "the liar's dividend", as well as governmental or commercial policies that overly restrict satire as well as truthful journalism and fact-finding (p. 48).[12] These important questions can be better formulated and implemented if one has a conceptual distinction between technical and deceptive manipulation.

All these white papers stand as a remarkable resource, offering an essential status report, serving as platforms for discussions, and presenting thought-provoking examples from various angles. They effectively stimulate a multitude of reflections and concepts that might not have surfaced without these valuable initiatives. These efforts stem from diverse stakeholders, underscoring their widespread dedication to combating disinformation, and upholding the values of democracy.

Simultaneously, there exist pervasive conceptual challenges that impede the direct translation of these white papers into actionable policies. My focus has been directed towards one of the pivotal concepts, that of manipulation. I have identified two concepts of manipulation, each with its roots in two different, although heterogeneous research areas, the social sciences and the humanities on one side and medicine and the natural sciences on the other. All the white papers examined in this study, with the noteworthy exception of *DEEP FAKERY—an action plan* that results from discussions among a group of mathematicians, oscillate between these two notions. I have proposed using the straightforward differentiation between the two manipulation concepts as an analytical distinction to see the challenges in the public debate better. This analytical distinction needs to be scrutinized more carefully. Below are some critical inputs for such an investigation.

4. Technical and Deceptive Manipulation Revisited

All the selected white papers discuss the photographic manipulation of video and other visual (and audiovisual) material and all but one slide between a moral and a non-moral manipulation concept. A focus on such a conceptual difference and its conceptual anchoring in various academic research areas could make these white papers better tools for the public debate and for advising politicians, organizations, media platforms, and various types of institutions to make appropriate decisions regarding the use of and regulation of visual material. As they stand now, they contribute to attention and debate on crucial topics concerning visual disinformation. At the same time, an uncritical use of an ambiguous manipulation term can contribute to an unfocused debate and a potentially unfortunate regulation of entertainment, criticism, and satire. However, the analysis of the white papers also shows that more than this simple conceptual distinction is needed. This is perhaps most evident regarding the concept of deceptive manipulation.

Inspired by Teun A. van Dijk's approach to interpersonal manipulation, I suggest introducing a concept of text or discourse in discussions about visual disinformation.[13] As van Dijk underscores, most interpersonal manipulation occurs via textual or spoken communication (van Dijk 2006, p. 360). He conceptualizes manipulation as an illegitimate exercise of power achieved through discourse. His conception of discourse encompasses other forms of communication, including photographs, films, and various expressive modes (p. 360).

Beyond discourse, van Dijk insists that we must also account for two other facets of interpersonal manipulation—the social and cognitive dimensions. He postulates that manipulation is inherently social because it stems from an interplay and power imbalance among social actors and groups. It is also a cognitive phenomenon, given that manipulation essentially involves influencing the psychological processes of participants. Finally, it is a discursive-semiotic phenomenon, considering that manipulation is often executed via language, dialog, and visual signals (p. 361). Van Dijk emphasizes the indivisibility of these distinct aspects. They are all essential components of a unified theory that elucidates the interconnections among the different dimensions of interpersonal manipulation (p. 361).

Distinguishing these three dimensions of interpersonal manipulation can help analyze what we have here called deceptive manipulation. By emphasizing that interpersonal

manipulation often occurs through text, van Dijk provides an opportunity to discuss whether the photograph and the textual context in which the photograph is part of are misused to mislead someone. Whether the photograph has been technically manipulated or not will only be one factor among many in investigating the text's meaning potential. One will be able to discuss what many of the reports I have examined refer to as "manipulated content", using a concept of textual or discursive manipulation instead and activate all the resources that the humanities' many text-analytical and text-theoretical traditions offer. It will be a valuable correction to the somewhat vaguely mediated concept of deceptive manipulation.

Also, the other two dimensions that van Dijk emphasizes as necessary in interpersonal manipulation can be a helpful nuance of the concept of deceptive photographic manipulation. In the article "How to do things with deepfakes" (Roberts 2023), Tom Roberts distinguishes between deceiving audiences by giving rise to false beliefs and more directly manipulating an agent's actions. The former will manipulate people's perceptions and may be compared to what van Dijk refers to as cognitive mind control (i.e., the interference with processes of understanding, the formation of biased mental models and social representations such as knowledge and ideologies). The latter will represent an unacceptable influence on people's actions and choices and could be considered a specific and valuable concretization of what van Dijk regards as social power abuse. I will not further develop such a text or discourse analytical approach to the deceptive manipulation of visual material here, beyond pointing out that the social sciences and the humanities have theoretical and analytical resources to critically discuss how deceptive manipulation works in the context of photography and video and that these resources must be included in the public debate.

Today, technical developments seem to challenge the concept of technical manipulation. What is the status of the conception of technical manipulation within computational photography and AI-enabled photographic practices? Although many have claimed that all photographs are already manipulated by virtue of the camera's equipment and the camera's position (Leighten, p. 133) or by the adjustments of contrast values and many other parts of the processes of taking, developing, and enlarging photographs (Bátori 2018, p. 37), the notion of technical manipulation in photography appears to imply a differentiation between the "event of capture" and the "event of visualization", to borrow phrasing from Peter Osborne (2010, pp. 59–60).

In the realm of contemporary computational photography and AI-driven photographic techniques, this two-fold nature of the photographic procedure—encompassing both image capture and technical manipulation—is being challenged (Zhang 2022, p. 697). Emerging camera technologies now integrate artificial intelligence to correct exposure, rectify distortion, and apply filters while capturing photographs, eliminating the need for post-processing. AI-enhanced smartphone cameras capture bursts of images using multiple lenses, capturing diverse information. Subsequently, AI algorithms amalgamate the finest aspects of these pictures or craft entirely new images that individual cameras could not capture alone, including adjustable focus photos (Lu 2019, p. 22). It appears that the impact of AI and machine learning technologies on photographic images takes place at the very initial moment of light exposure and image capture. What does the technical manipulation of photography mean when the once disjunctive stages of image capture and technical manipulation have merged into a set of dynamic, encompassing processes?

A radical reconfiguration of the distribution of agency between humans and technologies within photography may be challenging both conceptually and politically. I still believe that it is important to emphasize that the process of capturing an image with a digital camera—regardless of the complexity of the operation and any processing during this procedure—can be considered technical manipulation as long as one is concerned with processing or improving the capture rather than misleading people or violating social norms. The sports photo finish may serve as an example.

Simply put, a photo finish image in sports is created using specialized technology to determine the winner in a close race. High-speed cameras capture a sequence of images

as the competitors cross the finish line. The process is often visualized as a still image. However, this image does not show the spatial distance between the competitors as they approach the finish line. On the other hand, the image visualizes a high number of camera captures taken at a very rapid rate in a minimal area, namely the finish line. The result is an image that records multiple times in a single place (Maynard 2017, p. 50). One could call this a technically manipulated photograph. It appears as one still image but is composed of many. However, the purpose is to register and process the camera captures to obtain a desired composition, a picture where one can more easily read temporal distances. With this, I want to emphasize that there may still be a need to have a concept of technically legitimate manipulation and processing of camera captures, whether it is included as part of post-production and can be characterized as post-capture, as one might be used to thinking, or integrated into the capture process.

Before I conclude, I would like to consider whether we should introduce new terminology rather than attempt to clarify the plethora of terms related to manipulation. For instance, the 2018 WITNESS report suggests categorizing information disorder into three distinct types: mis-, dis-, and malinformation. Misinformation describes unintentional inaccuracies, such as incorrect timestamps or locations. Disinformation refers to the deliberate dissemination of false information with the intent to cause harm. Malinformation, on the other hand, involves the release of truthful but private details intended to damage an individual.

While these distinctions are undoubtedly insightful and beneficial, I believe that there is still a place for the concept of manipulation. Arguably, it extends beyond everyday vernacular to hold significant meaning, having been intricately woven into and evolved within various academic fields over an extensive period. Consequently, the term may prove challenging to discard, not merely due to its common usage but because of its deep-rooted significance in scholarly discourse.

Admittedly, employing the term "manipulation" for technical processes and adjustments can easily lead to misconceptions in both everyday language and in humanistic and social science studies of photography. To mitigate misunderstandings arising from the assumption that manipulation inherently implies moral wrongdoing, instead of merely indicating that a particular manipulation is technical rather than morally questionable, alternative terms such as "modification" or "adjustment" could be employed. However, this approach proves ineffective and unsuitable for addressing the contemporary and future challenges in photography.

Firstly, the technical and non-moral notion of manipulation has gained acceptance in various academic fields, including computer science and related areas dealing with computational photography, AI-generated images, and other pertinent subjects. It is not feasible to simply discard a concept due to its misinterpretation by researchers from other fields or debaters or stakeholders without this expertise from the natural sciences. Furthermore, the demand for and significance of interdisciplinary collaboration will only continue to grow in the years ahead, particularly within the aesthetic, cultural, and political fields of photography and video. Given that concepts of manipulation play a pivotal role in technical, cultural, and political discussions surrounding photography and video, it becomes imperative for researchers, along with professionals in art, journalism, law, and other domains, to engage in productive discourse across their respective areas of expertise. Therefore, it is more advantageous for each discipline to clarify the meanings of these terms rather than advocating for the abandonment of an established notion. Consequently, I propose that we explore the various concepts of manipulation, establish a better understanding of their interrelations, and acknowledge that these distinctions are analytical tools within a rapidly evolving technical, aesthetic, and cultural landscape.

5. Conclusions

Back in 1997, Patrick Maynard wrote that photography is a branching family of technologies (Maynard 1997). Like third cousins, great-uncles, and distant relatives who

emigrated to other parts of the world, photography has branched out in complex ways over two hundred years with many functions, uses, and aesthetics that at this point may not have much to do with each other. Like other forms of kinship, it entangles itself in other families, different technologies, be they other imaging technologies, other recording technologies, other distribution technologies, or technologies we do not even think of as related to photography. This complexity is worth considering every time we allegedly face photography in crisis.

In times of social and political turmoil, photography is reduced to just one thing, one function, a technique, not even a technology, not to mention a family or 200-year-old intricate kinship. The crisis now is variously called deepfake, AI, fake news, or post-truth. Social problems are reformulated into technological problems. Technological problems can be kept at arm's length and reformulated into solvable problems, which Joshua Habgood-Coote calls "techno-solutionism" (Habgood-Coote 2023, p. 103). An unclear concept of photographic manipulation makes it easier to regard the problem as a technical issue which is often developed or abused by bad actors but can be solved technically.

We, therefore, need now, perhaps more than ever within photography, a concept of technical manipulation that is conceptually separate from what I have here simply called deceptive manipulation, the use of photography or video to mislead other people, be it perceptions, beliefs, knowledge or power relations. There is no simple relationship between technical manipulation and deceptive manipulation. We need more and different concepts and analytical resources. Some of them are discussed above. The first step is to consider technical and deceptive manipulation as a simple and valuable analytical distinction in public discussions of photographic manipulation.

Furthermore, it is essential to know that these two concepts of manipulation are rooted in two separate, although heterogeneous, academic cultures that do not speak sufficiently well together. The relative lack of contact between these two academic cultures is essential to understanding the impact of the two terms in each academic culture and how they are part of some basic mindsets that are not easily communicated across the cultural gap because they are taken for granted. I also believe that this plays out in many of the white papers we have examined, written by a heterogeneous panel of experts. When specialists across these academic cultures collaborate, for example, on developing policy documents that are used as a basis for developing policies, laws or guidelines for the regulation of social platforms, it is crucial that we clarify conceptual resources. This makes thinking better. It also provides a better basis for political decisions.

It is a research policy mantra today that all significant societal problems require interdisciplinary collaboration. In this article, I have laid a foundation for a collaboration around photographic manipulation across the arts and social sciences on the one hand and the natural sciences, medicine, technology, and engineering on the other. Researchers and practitioners from these heterogeneous areas have studied photography for nearly two hundred years. I hope that building a bridge between discussions about manipulation in two disparate academic fields may contribute to further developing an interdisciplinary collaboration on photographic manipulation.

Notes

1   Deepfake technology employs deep learning algorithms, notably deep neural networks, to create highly convincing and often deceptive images, video or audio. It entails the technical alteration of visual and auditory components to substitute or overlay one individual's likeness or voice onto another, generating the illusion of actions or statements they never actually made. This technology has seen rapid advancements, encompassing diverse techniques, aesthetics, and applications.

2   For research on different types of white papers and their complex societal and political history, see (Thomson 2008; Race 2007; Willerton 2013; Pollitt 2013; Malone and Wright 2018).

3   The former three scholars come from medicine and physiotherapy, while the latter, Mason, works with robotics and computer science.

4   Most of these are trained as philosophers, whilst Alan Ware contributes to political science.

5   This is the context, "It should therefore be borne in mind in the rest of this article that 'manipulation' is a typical observer's category, e.g., of critical analysts, and not necessarily a participant category; few language users would call their own discourse 'manipulative'. As is also the case for racist discourse, this shows that the well-known principle of some forms of ethnomethodology and Conversation Analysis (CA), namely to make explicit members' categories, is not always a useful method in more critical approaches. Indeed, this would make the (critical) study of sexist or racist discursive practices impossible" (van Dijk 2006, p. 360).

6   The expression "information distortion" refers to an earlier report by First Draft, Information Disorder: An interdisciplinary framework, from 2017, which is not included in this study because it does not focus particularly on images and does not explicitly state what kind of image practices they imply.

7   Involuntary porn is an umbrella term used for a variety of image-based sexual abuse, from what is known as "revenge porn", where intimate visual material is often distributed to frame a former partner, to various types of technically manipulated photography or video where one, e.g., has face swapped the image of a person into an existing porn film to frame this person. It is called involuntary porn because the person targeted has not given their consent to participate in a video that is distributed as pornographic. (See, e.g., McGlynn et al. 2017).

8   Paris and Donovan state that the Rana Ayyub video is a lookalike; in many other places, it is claimed to be a deepfake (face swap). For examples in the white paper selection here, see (WITNESS/First Draft 2018, p. 13; Centre for Data Ethics and Innovation 2019, p. 10), and Sentinel (Tammekänd et al. 2020, p. 24).

9   The other two "snapshot" papers in the series cover the role of AI in insurance policy, and voice assistance technologies such as smart speakers (UK Government n.d.).

10   Where Deeptrace, in the report "The State of Deepfakes", claims that the vast majority of deepfakes are pornographic (Ajder et al. 2019, p. 1), Sentinel argues that it is about 19% (Tammekänd et al. 2020, p. 8). I will not go further into this discussion here.

11   On the other hand, one may claim that the distinction between deepfake and deepfakery parallels the difference between technical and deceptive manipulation without me pursuing such a discussion here.

12   The Liar's Dividend is a term from Robert Chesney and Danielle K. Citron that refers to an indirect negative effect of people's increased awareness of lies and disinformation. Not all lies involve affirmative claims that something occurred (that never did); some of the most dangerous lies take the form of denials (Chesney and Citron 2019, p. 1785). Such disclaimers can lead to undermining trust in well-documented cases.

13   Bátori (2018) proposes to analyze "photographic deception" using a theory of pictorial illocutionary acts, developed as an extension of speech act theory, an interesting alternative to the critical discourse analysis of van Dijk.

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