Visual Disinformation and Visual Literacy: Key Skills for Resilience

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Visual Disinformation and Visual Literacy

Key Skills for Resilience

BILDKONST SVERIGE

This report was produced by Bildkonst Sverige (Visual Arts Sweden) on behalf of the Swedish Psychological Defence Agency. The authors are **Isabelle Karlsson**, communications scholar at Lund University, who also coordinated the project; **Hedvig Ördén**, political scientist and researcher at the Psychological Defence Research Institute, Lund University, and **Tarja Karlsson Häikiö**, professor of visual and material culture at HDK-Valand at the University of Gothenburg. **Magdalena Malm**, Secretary General of Bildkonst Sverige, was responsible for the production of the report. Our aim has been to contribute to greater psychological defence capacity in Sweden by producing this report on visual literacy and its importance for resilience against disinformation. The report is funded by the Swedish Psychological Defence Agency. The authors are responsible for the content and conclusions.

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Contents

Foreword

The World Economic Forum's Global Risks Report 2025 singles out misinformation and disinformation as our most serious short-term global threat. At the same time, a major shift is underway: almost without us noticing, images have come to dominate our media feeds and have thus become an important tool for spreading disinformation. With the development of generative artificial intelligence, new opportunities to create highly realistic images and video material have emerged, and the issue of visual disinformation has become acute. In the Swedish context, this has been illustrated by recent cases of TV companies inadvertently airing AI-generated content. Despite these worrying developments, the focus of the debate today is on the technological advances rather than on the skills people need to manage the flow of images. There is talk of legislation and of restrictions on the use of digital platforms in schools, while measures to increase visual literacy are conspicuous by their absence.

Visual material is effective in communication because we consume images faster than text and remember images better than things we read. Images serve multiple purposes. For example, news footage has long been regarded as an authentication of reported events. But images and video materials are also associated with pleasure, entertainment and culture. This is why communications in the form of memes or humour reach us when we are less attentive and therefore more susceptible to them.

Images have always been a means of illustrating narratives and conveying emotions. Nations have developed an aesthetic in propaganda that amplifies their message and glorifies their leaders, while entities such as Islamic State were already using video games to recruit new members ten years ago. In today's social media feeds, images and moving images are key elements in disinformation.

In Sweden, there is a long tradition of source criticism. In recent years, however, we have seen how a one-sided emphasis on source criticism can lead people to distrust information. Ironically, this scepticism, this feeling that nothing can be believed, is one of the primary objectives among foreign actors spreading disinformation. For this reason, discourse on source criticism has shifted to focus more on source trust, but often neither the image as a source of disinformation nor the importance of practical knowledge is emphasised. Active proficiency in expressing oneself through images contributes to analytical skill, agency and resilience. Achieving this proficiency requires both training in theoretical analysis and active practice.

The fields of visual arts and film involve both theoretical knowledge of image analysis and practical knowledge of how to express oneself through images. Analyses of images, angles, origins, and the difference between documentary and staged images have long been central questions for artists in educational and artistic research. This is captured in the concept of *Gestaltung*, which denotes a process by which an idea or concept takes form in, for example, an image or a film. In the arts, there is a deep understanding of how composition, colouring choices, and the cropping, cutting and editing of images can

be used to create different messages and activate different emotions. Training in visual arts develops this ability to communicate though form, which is a key skill in today's society: being able to express oneself visually enhances analytical competence and confers agency, while knowledge about self-expression through visual means enables participation in visual discourse.

The new image-dominated digital landscape challenges us as democratic citizens. It raises issues that are difficult to address through legislation alone: greater and deeper knowledge is needed. This report demonstrates that such knowledge is to be found in schools of visual arts as well as in art museums, cinemas and other institutions working in visual arts and film. With increased resources and coordination, it is possible to scale up efforts and equip the Swedish public to counter visual disinformation.

The report brings together research on malign information influence and visual disinformation, and links these to research on visual arts education and practical knowledge from the fields of visual arts and film. Our hope is that the material presented here can serve as a useful basis for strengthening Sweden's resilience against visual disinformation, increase citizens' visual literacy, and in this way contribute to a more robust psychological defence.

This English version covers the research overview from the original Swedish report. It then lists the report's needs analysis in general terms in a final summary.

Magdalena Malm
Secretary General, Bildkonst Sverige

Concept Overview

Malign information influence refers to information activities directed by foreign actors against Sweden and Swedish interests with the intention of harming us and influencing our perceptions, decisions or behaviour.

Visual literacy refers to all forms of competence that are related to images and is fundamentally anchored in the ability to produce, create, process and interpret images. Visual literacy embraces all types of image production, analogue as well as digital, with all the different techniques, tools and materials employed. Visual literacy also encompasses the ability to read and decode images, visual messages, visual materials and elements, an ability that is central to critical thinking about images.

Gestaltung denotes a process by which an idea or concept takes on artistic form, for example in images or film. It consists of a deep understanding of how the composition, colour selection, cropping, cutting and editing of images are used to create different messages and awaken different emotions. The *Gestaltung* affects the meaning of the image because it modifies how the content is interpreted.

Media and information literacy (MIL) encompasses cognitive, technical and societal knowledge and skills that enable individuals to gain effective access to media content and to critically analyse information. It provides people with the competence to understand how media is produced, funded and regulated as well as the trust and ability to make informed decisions about which media they consume. MIL is the key to understanding the ethical implications of media and technology, and to communicating constructively – interpreting, creating and publishing content – to make oneself understood and heard (Chapman & Oermann 2019, adapted by Ulla Carlsson, 2023).

1. Introduction

Democratic governance ultimately rests on citizens being able to make well-informed decisions and be active in holding government officials and institutions accountable (Dahl, 1998). Within the framework of a liberal democracy, citizens need access to relevant information. It should also be possible to discuss political issues in an open, meaningful and pluralistic dialogue. Freedom of expression, press freedom and freedom of opinion make it possible to have access to information, but also give different groups the opportunity to participate in the debate and express different perspectives and views.

As security tensions increase, information influence is a growing problem for democratic societies. The spread of disinformation – incorrect or inaccurate information intended to mislead – can influence public discourse, increase social divisions, and undermine citizens' access to relevant and accurate information. This makes both pluralistic dialogue and democratic accountability impossible. So-called malign information influence – when foreign actors try to influence citizens or decision-makers through manipulative techniques – can further undermine peoples' ability to make independent decisions and their trust in democratic actors and institutions. In war and crisis, such a lack of trust can affect the authorities' ability to keep the population informed and can ultimately affect citizens' willingness to defend their country.

Despite extensive debate about malign information influence, the potential for image- and video-based disinformation has often been overlooked. At the same time, since the 1990s, society has gone from being text-based to being increasingly dominated by a stream of images. This shift is particularly noticeable among children and young people. For example, video-based social media – such as TikTok – is the main news source for younger people today (Newman et al., 2025: 14). This change in the media environment raises the need for greater understanding of how visual material affects users. Image and video material captures our attention in a different way than text (Weikmann & Lecheler, 2023). The question of visual disinformation is still more relevant in light of the development of generative artificial intelligence (GenAI). GenAI facilitates the production of realistic visual material. In the long run, increased uncertainty about the authenticity of visual media risks undermining trust in established media (Vaccari & Chadwick, 2020).

Visual literacy is developed through both theoretical knowledge and practical experience in expressing oneself using images and moving images. Therefore, to address the issue of disinformation and visual literacy, this report combines empirical research on disinformation and visual studies with practice-based and artistic research in visual arts education.

The report's research overview shows how the development towards a visual society places new demands both on individuals and on key stakeholders in society to be able to critically review and interpret image and video material, but also to be able to communicate in visual form. To communicate information and express thoughts, opinions and feelings in speech, writing or image is part of freedom of expression (Chapter 2, Section 1 of the Instrument of Government, 1974:152). Visual production is therefore an increasingly

important skill for democratically-empowered citizens. Source criticism and interpretation of visual material are key skills, but even if these skills are strengthened, challenges remain. Is it enough to be able to read: should we not also be able to write? Is it enough to be able to decode images, or should we also be able to actively express ourselves in images?

This is an English version of the report. The original Swedish report consists of two parts: a research-based knowledge overview focusing on information influence, visual disinformation and visual literacy; and a needs analysis focusing on the concrete efforts required to strengthen visual literacy in Sweden. This English version centres on the research overview. The conclusions of the needs analysis are concisely outlined in the final summary.

The study addresses the following questions:

What knowledge exists today in the areas of visual literacy and disinformation, and how do these areas relate to each other?

How can visual literacy contribute to societal resilience against malign visual information influence?

What resources are available, and what concrete measures are needed, to raise visual literacy among children and young people, the general public, civil society, and key public services? (Only in the Swedish report.)

The report provides a comprehensive review of current research on visual disinformation, visual literacy and their importance for society's resilience to malign influence, with the aim of strengthening Swedish psychological defence. The Swedish version also includes a survey of societal stakeholders, structures and areas linked to visual literacy that should be developed, with a particular focus on children and young people. Overall, the report shows that visual literacy is a key component of the work against visual disinformation. This applies to everybody but is particularly important for children and young people growing up in a media environment where images and video dominate. To be able to navigate this environment, they need to develop the ability to interpret and critically examine visual communications, as well as to express themselves visually.

The needs analysis shows that visual literacy needs to be prioritised in schools. This can be achieved partly by strengthening the visual arts as a school subject and partly by integrating it with other subjects and with the teaching of source literacy. Visual arts and film bodies, well-versed in the concepts and practices of visual literacy, can play a major role in raising awareness both in and outside schools, and should be resourced accordingly. Work on visual literacy must be strengthened within government agencies responsible for the visual arts and film.

2. Research overview

The following chapter presents a research overview of current work in three different fields. The chapter consists of four parts. In the first part, current research on information influence is presented as a combined democratic and security policy problem in a new media environment that is increasingly characterised by visual elements. The focus is on how text and images differ as tools for influence, and on existing studies of the potential effects of both information influence and visual influence. The overview is concerned with current research on disinformation and malign influence in the digital environment, though it also touches to a lesser extent on the extensive existing research on propaganda. The second part introduces visual literacy as a potential tool for increasing resilience against visual disinformation at societal level. We present research on different key aspects of visual literacy. The third part outlines a set of central competencies related to visual literacy. The focus is on knowledge-enhancing measures and educational methods for increasing skills in source criticism, interpretation of image and video material, and independent production of visual material. The chapter concludes with a summary focusing on identified knowledge gaps and priorities for future research.

Information Influence, Democracy and Citizenship

Information influence as a persistent everyday problem can be considered a problem closely linked to developments in the media and information environment. For much of the 20th century, the established media served as the "gatekeepers" of the public sphere (Farrell et al., 2021). Established media players had considerable power to set the agenda for public debate through their news coverage. In recent decades, however, the media landscape has undergone major changes. The gatekeepers of the public sphere now face competition from social media (Farrell et al., 2021). These new platforms provide greater opportunities for direct communication both to politicians and members of the public, but they also offer a new technological architecture in which certain information, and messages from private actors, can be widely disseminated. At the same time, it becomes more difficult for users to scrutinise the sender and the underlying technology. Levels of inauthentic communication originating from bot networks are increasing, and advances in GenAI make it possible to produce text, realistic images and video material quickly and at low cost. Access to large amounts of user data also makes it easier to target and adapt messages to different audiences.

A society's democratic resilience in relation to information influence is partly linked to the public's news consumption (Nygren & Ecker, 2024). A study by the SOM Institute shows a clear link between news consumption, political knowledge and social engagement (Andersson, 2025). Regular news consumption creates a greater understanding of politics and contributes to a feeling that it is possible to influence it. The relationship between news consumption and political interest is particularly strong among younger people (Andersson, 2025: 26). Today, however, global studies show that patterns of news consumption are

changing in line with the media landscape (Newman et al., 2025). Social media has become an increasingly important source of news, particularly for younger people (18-24 years old) (Newman et al., 2025: 14). At the same time, this age group shows the lowest consumption of news sites and news apps (Newman et al., 2025: 14). These changing consumption patterns may make it more difficult for established news media to reach younger audiences.

The format of the news consumed is also changing. Younger users are more focused on video material than text material (Newman et al., 2024: 10). The video-based app TikTok is popular, the majority of its users being under 30 years of age (Curry, 2025). However, consuming political news via social media does not seem to contribute to new knowledge about politics in the same way as traditional news consumption (Shehata & Strömbäck, 2021). One reason may be that social media is characterised by a particular logic of content production that affects how material is presented and consumed (Shehata & Strömbäck, 2021: 141). Unlike news sites and apps, content on social media is structured by algorithms developed to maximise commercial interests (Kozyreva et al., 2020). This technological architecture rewards emotionally charged information that captures the user's attention (Kozyreva et al., 2020).

The new media landscape also places new demands on peoples' ability to identify questionable information. The spread of disinformation – false information disseminated with the aim of misleading people – has increased over the past decade (Broda & Strömbäck, 2024: 139). The motivations of those seeking to influence may be both political (Denov, 2025) and economic (Skibinski, 2021). Global studies show a high level of concern (58 per cent) among respondents about their ability to distinguish genuine news material from disinformation (Newman et al., 2025: 11). The video-based platform TikTok is the biggest source of concern (Newman et al., 2024: 10). Although respondents in Western Europe show greater confidence than the global average (Newman et al., 2025: 11), studies point to differences in actual ability between different social groups (Nygren & Ecker, 2024).

The situation facing the public today can be seen as a growing challenge to democracy. At the global level, there is a tendency towards democratic backsliding, closely linked to the spread of disinformation (Nord et al., 2025). The biggest challenge for liberal democracies is an increase in disinformation by political elites and government representatives (Nord et al., 2025: 38). This global trend further underlines the importance of a knowledgeable, active and well-informed public for strengthening democratic resilience (Lührmann et al., 2020; Merkel & Lührmann, 2021).

Information influence as a Security Policy Issue

Information influence from foreign powers can be seen as a combined democratic and security policy issue, and a challenge that is ever more topical in a time of increasing geopolitical rivalry and security policy tensions.

Information influence is today a component of a broader hybrid strategy in which state or non-state threat actors use manipulative techniques to increase division within a country (Wigell, 2019: 262). The focus is on identifying vulnerabilities in the population and then exploiting them for strategic gain. Targeted

messages can be used to fuel tensions between groups and increase the level of conflict in society; this may involve exacerbating political, ideological, economic or social divisions (Denov, 2025: 160). Such divisions can contribute to reduced trust in society and can affect public confidence in democratic institutions. In the long run, this type of influence can also undermine the possibility of meaningful pluralistic public dialogue (Hedling, 2025). Thus, information influence is a security policy tool that targets the fundamental principles of the liberal democratic order (Hellman, 2024: 3).

In a crisis context, malign information influence poses a particular problem. Crisis situations, marked by a high degree of uncertainty, provide fertile ground for the spread of misinformation and rumours (Akram et al., 2022). Reliable information is often scarce, while citizens experience an increased need for information (Falkheimer, forthcoming). This uncertainty creates opportunities for parties who want to exploit the information vacuum that arises in order to exert influence. Research on crisis communications shows the importance of communications from credible parties in a crisis (Falkheimer, forthcoming). It is clear that malign information influence, if it successfully undermines trust in information and authorities, will also reduce the ability of government agencies and others to act in a crisis (Wagnsson, 2020: 409).

In propaganda research, malign information influence in wartime is a well-researched topic (Lasswell, 1971). Ultimately, effective defence in wartime rests on the willingness of citizens to defend their country. At the same time, both sides in a conflict have an interest in spreading messages that undermine the resistance of their opponents. This means that war tends to be accompanied by a parallel information war. So-called 'psychological warfare' is directed both at the population as a whole and at troops at the front (Libicki, 1995: 35), and a key strategic goal of state-sponsored propaganda is to spread cynicism and a sense of resignation (Pomerantsev, 2015). Studies show that the Nordic countries have a comparatively high willingness to defend themselves (Puranen, 2014: 271). In the Swedish context, this is partly explained by the level of trust among the population (Persson & Widmalm, 2023). Both trust between individuals and trust in political figures have been shown to be important components of the will to defend (Persson & Widmalm, 2023). This means that the information influence that in peacetime aims to undermine trust in democratic institutions also risks having implications for the population's resilience in wartime.

However, civilian populations are not entirely defenceless against information influence. The new media landscape offers new opportunities for members of the public to actively counter attempts to influence them. Kearns (2018) describes how individuals can act as "foot soldiers" in hybrid warfare conducted on social media. Studies of the spread of information after the Russian downing of the MH17 passenger plane in Ukraine show, for example, how state actors played only a marginal role in spreading messages (Golovchenko et al., 2018). Instead, private individuals were active in both spreading and correcting misinformation (Golovchenko et al., 2018). Research focusing on social media during terrorist attacks shows similar results. For example, users engage in posting and amplifying lighter material to divert focus away from images of traumatised individuals (Eriksson Krutrök, 2023). This

highlights how active members of society, with the proper understanding and the ability to use communicative tools, can play a key role in building resilience to information influence in war as well as in crisis.

Visual disinformation

The literature on information influence focuses primarily on text-based influence, yet some of the most popular social media platforms today are image- and video-based. According to a report from the Reuters Institute, shifting strategies among major social media platforms mean that video-based material is playing an ever-greater role as a news source (Newman et al., 2025). Visual material on social media is shared to a greater extent than text-based material (Tucker, 2018: 47–48).

Visual influence has been used as a propaganda tool for a very long time (Taylor, 2013). Johnson (2011: 310) describes, for example, how propaganda during the Second World War included both text-based messages, such as leaflets, and visual media in the form of photographs and films. In recent years, visual propaganda has been used by terrorist groups, among others (Dean et al., 2012; Rothenberger, 2012). Video games too have served as a channel for spreading disinformation, while images and video material from the gaming world have been exploited for visual disinformation on other platforms (Falkheimer & Pamment, 2025; Pamment et al., 2023). Propaganda is essentially about the manipulation of meaningful symbols (Jowett & O'Donnell, 1999: 196), and this can be achieved using a variety of media.

Art and artists have always played a central role in visual propaganda (Moore, 2010). Historically, visual artists were needed to produce propaganda posters, for example (Moore, 2010). Artists also played their part, alongside national media, in fostering patriotic awareness in populations, through the production of national symbols from postage stamps to banknotes (Wolff, 2025). Filmmakers too were central in producing pure propaganda films in parallel with more entertaining material (Staal, 2019: 49). Propaganda in the guise of entertainment made it possible to anchor certain political messages in a broader population in a more indirect way (Staal, 2019: 49).

Methods of propaganda production have always adapted to the available technology. What distinguishes today's situation is how new technologies create an opportunity to produce increasingly realistic visual material. Studies show, for example, that images of faces created using artificial intelligence can be impossible to distinguish from authentic images, and in some cases are also perceived as more credible (Nightingale & Farid, 2022). The technical possibilities for artificial image production are developing rapidly (Gambín et al., 2024). This underlines the need to be mindful of the potential effects of visual disinformation, and how misleading material in the form of images and videos can interact with text.

In contemporary research, visual disinformation is defined as "the use of images by agents of disinformation to deliberately present a misleading or fabricated image of reality" (Hameleers et al., 2020: 283). Examples include so-called deepfakes – inauthentic or manipulated video material (Gambín et al., 2024) – which can influence peoples' information gathering, knowledge production

and judgement (Fallis, 2021). Recent studies suggest that visual disinformation differs from text-based information influence in several respects. Differences are seen, for example, in how visual material is produced by its creators and how it is processed by the human brain (Weikmann & Lecheler, 2023).

In terms of production, the quality of visual disinformation can vary depending on access to technology and cost. A well-known and long-standing problem is the use of authentic imagery to support false claims or encourage misleading conclusions (Newman & Schwarz, 2024). In terms of resources, it is relatively easy to take an existing image or video out of context, or to crop photographs to create a misleading effect. Until recently it was harder, and more costly, to create deepfakes or manipulate data visualisations, for example by using artificial intelligence. For this reason, Weikmann and Lecheler (2023) conclude that the more sophisticated the visual disinformation, the more likely it is that a state actor is behind the manipulation. However, there are many indications that this is rapidly changing with the emergence of more sophisticated and cheaper AI-based tools.

In terms of processing, visual material has the potential to influence by directing attention to a message or by offering an interpretive context (Newman & Schwarz, 2024). Cognitive scientists have shown that people remember images more easily and that visual material is processed more efficiently by the brain (Stenberg, 2006). Images tend to function as 'mental shortcuts' and as 'proof' of what is being reported. Studies show, for example, how the presence of an image alongside a message tends to increase the perceived truthfulness of the message (Newman et al., 2015). Furthermore, there is a widespread perception that visual material affects people more effectively by arousing emotions and therefore has stronger and more lasting effects on individuals' behaviour and attitudes (Hannah, 2021; Powell et al., 2015). This in turn assumes that emotions – such as empathy – influence people on a direct and unreflective level (Zaki, 2014). However, psychological studies suggest that the role of emotions in influencing people is context-dependent (Zaki, 2014). For example, people often feel empathy for individuals whom they perceive as belonging to their own group, but not necessarily for other groups (Wollberg & Cikara, 2018). Studies such as these underline that the emotional processing of visual material does not take place in a vacuum but must be understood in both an individual and a broader socio-cultural context (Mielczarek & Perlmutter, 2014: 220–221).

How Effective are Information Influence and Visual Influence?

It is generally difficult to measure information influence's effect, and considerably easier to determine its extent and prevalence. The methodological challenges involved in measuring effect can lead to an overestimation of the effect of information influence (Wallenius & Nilsson, 2019; Wallenius, 2022). However, this potential for overestimating effects does not mean that information influence is not a problem.

Available research has identified a number of factors that may be linked to an increased susceptibility to influence. The key literature in the area is grounded in cognitive research and psychology. The premise is that fundamental human

cognitive abilities can in some cases create problems in relation to a new media environment. One challenge, for example, is the dynamics of these environments, and how digital architecture allows information to be created and altered in a short period of time (Kozyreva et al., 2020: 108). Such an information environment makes it more difficult for the brain to maintain focus. Studies show, for example, that the sharing of misinformation by users on social media is often rooted in inattention rather than deeper conviction (Pennycook et al., 2021).

Cognitive scientists also describe how 'cognitive biases' – described as mental shortcuts for decision-making – can create problems in the information environment. People tend to be more ready to accept information that is in line with their existing views and perceptions: so-called confirmation bias (Nickerson, 1998). This also applies to information spread by people who are seen as belonging to one's own group, so-called in-group bias (Wallenius & Nilsson, 2019).

Influencers can use these cognitive constraints to their advantage in a digital environment. For example, large amounts of user data from social media facilitate the production of messages tailored to specific target groups (Heath, forthcoming). The digital environment also makes it possible to adapt accounts to create custom-made user accounts which signal a particular political, national, ethnic or religious identity in order to reinforce in-group bias. The effect of influence using in-group bias can be amplified by allusions to an external existential threat. A hypothesis put forward by Wallenius and Nilsson (2019) is that influence campaigns that establish a strong identification with an ingroup and link this to a threatening outgroup are more successful. This is particularly relevant for understanding malign influence in a security policy context.

Currently, studies on the effects of influence focus primarily on text-based influence. They largely confirm the hypothesis that influence operates through interaction with already existing opinions. People with strong political opinions are more vulnerable to disinformation that is consistent with their established ideological positions (Arcos et al., 2022; Hjorth & Adler-Nissen, 2019). Moral-emotional language tends to increase the spread of messages within one's own political group on social media (Brady et al., 2017). Studies also show how messages that align with political views in a polarised environment can create ideological asymmetries in how foreign powers influence a population (Hjorth & Adler-Nissen, 2019). This is consistent with how, for example, Russian propaganda channels tend to amplify news about internal divisions in target-group countries (Yang et al., 2024).

At the individual level, several factors are associated with degrees of resistance to text-based disinformation. For example, higher socioeconomic status and education level (Nygren & Ecker, 2024: 5), as well as good basic knowledge of the topics in question (Nygren & Guath, 2019), are related to a well-developed ability to identify false information. Low computer literacy, low levels of education, strong ideological convictions and distrust of the media (Baptista & Gradim, 2020) are linked with greater susceptibility to influence.

Research on the measurable impact of visual disinformation is very limited

(Dan et al., 2021). Some studies show no difference in effect between text-based and visual disinformation (Hameleers et al., 2022), while others suggest that deepfakes spread using political microtargeting techniques can be effective on smaller subgroups (Dobber et al., 2021). Studies focusing on the effect of so-called 'multimodal disinformation', where text is combined with images, show that this format is perceived as slightly more credible than text-based disinformation (Hameleers et al., 2020). The credibility of deepfakes can be greater if they are shared by supposedly credible sources (Shin & Lee, 2022). The potential effect of visual disinformation has been explained by the fact that images, to a greater extent than text, are perceived as a true depiction of reality (Messaris & Abraham, 2001).

The credibility of the visual medium may change in line with technological developments. Newman and Schwartz (2024), for example, warn of increased scepticism towards images and video material in the future. This is supported by experimental studies showing that political deepfakes did not mislead participants, but instead generated uncertainty about the authenticity of images (Vaccari & Chadwick, 2020). Increased uncertainty may in turn lead to reduced trust in news material in visual form (Vaccari & Chadwick, 2020; Weikman & Lecheler, 2023).

However, this focus on credibility only addresses one dimension of the problem. Images and video material are also part of the wider entertainment world. In a gaming environment, for example, visual material can offer participants a social platform for identity creation and a sense of representation (Pamment et al., 2023: 29). To the extent that active manipulation occurs, such platforms offer an opportunity to visually reshape historical events, to distinguish target groups and to use dynamics in the form of in-group and out-group bias to their own advantage (Pamment et al., 2023: 23–29). This takes place in an entertainment setting where users may be less aware of the influence. However, access to user data from gaming platforms is ultimately controlled by gaming companies, which can make research into the possible effects of visual influence in gaming environments challenging.

Overall, current developments indicate a need for greater public awareness of how to navigate a world of visual influence. Studies suggest that traditional fact-checking does not work as well when dealing with inauthentic video material (Vaccari & Chadwick, 2020), but research into the factors that increase resilience at the individual level is currently limited. More interdisciplinary research is needed, both on how visual disinformation is used for malign influence and how its effects differ from text-based influence. Given what we know about the difference between visual and text-based influence, it is probable that visual disinformation requires a broader range of measures and the development of specific visual skills.

Visual Literacy: Overview

One way to address this problem at the individual level is through the development of skills in so-called visual literacy. The term was coined by John Debes in 1969 (Williams & Debes, 1970). Debes argued that visual literacy is

characterised by the synchronisation of sight with other senses (sensory skills), which enables people to discriminate and interpret objects, symbols and actions that they encounter in their environment. The ability to distinguish visual material, the ability to discriminate between what is genuine and what is fabricated, and an understanding of how these affect us and how they affect our own ability to express ourselves visually, are central components of our daily lives.

Definitions of Visual Literacy

Visual literacy is an umbrella term for a set of skills which relate to the interpretation of images (Hattwig et al., 2013). Early definitions of visual literacy placed particular emphasis on visual cognition and perception, and researchers highlighted the processes involved in understanding and interpreting visual representation. The ability to create or manipulate images was generally not discussed, since the visual arts were considered to be the domain of artists and craftspeople (Avgerinou & Ericson, 1997; Bamford, 2003: 1–2). However, advances in digital technology have given visual literacy greater relevance, and today the term is also used to refer to image production capabilities and visual communication tools.

The shift towards understanding visual literacy as a multidimensional concept has been dominant in the research literature since the late 2000s (Brumberger, 2011: 21). For example, Stokes (2002) defines visual literacy as an ability to interpret and generate images in order to communicate ideas and concepts. This includes an understanding of all types of visual media, an awareness of visual manipulation, and an appreciation of aesthetic experiences (Messaris, 1994: 3–21). According to Wileman (1993: 114), visual literacy is closely linked to visual thinking and an "ability to turn information of all types into pictures, graphics, or forms that help communicate the information." The understanding of visual literacy as a competency has also broadened to include an understanding of the multimodal relationship between image and text. Mitchell (1994; Wiesenthal et al., 2000: 3) describes image and words as closely intertwined in what he calls *imagetext*, which means that an image exists for the most part in a certain context or discourse that is also linguistic. In summary, visual literacy today can be described as the ability to read and interpret meaning in text and images, but also to use visual literacy in other communicative contexts. Visual literacy also means being able to create meaning from visual information in a variety of media, as well as being able to read or interpret images or streams of images.

Over time, visual literacy has gained institutional status. Today, several international organisations promote it as a form of basic competency, and it is taught as part of national curricula. Visual Literacy Competency Standards for Higher Education defines visual literacy as 'a set of abilities that enables an individual to effectively find, interpret, evaluate, use, and create images and visual media' (ACRL, 2011). The European Network for Visual Literacy (ENViL) describes visual literacy as a set of acquired skills for creating and interpreting visual representations (Wagner & Schönau, 2016). In this context, the term 'visual' also refers to the haptic, motor and kinetic aspects of visual

representations and related processes, such as the creation and experiencing of three-dimensional objects or architecture (Schönau et al., 2020). Schönau et al. (2020) regard visual literacy as a neutral umbrella term covering various topics within the field of visual learning, without prioritising any particular theoretical, ideological or pedagogical perspective. This field includes learning with respect to all types of artificial "images", whether two-dimensional, three-dimensional or moving, artistic or commercial, ideological or propagandistic, informative or manipulative.

Visual Agency and Visual Culture

Visual literacy, understood as an individual's ability to interpret and communicate through images, is closely related to the development of one's visual agency. Agency is essentially about having the ability and right to make one's own decisions and having the power to act. Visual agency would then mean having the ability to make your own interpretations of what you see, draw your own conclusions, and act on them. For example, Freitag (2002: 366) describes the act of seeing as a fundamental part of individuals' construction of meaning and identity, and something that makes them critical independent observers of power and co-creators in society. In a culture where visual material is increasingly dominant (Lindgren, 2022), and where visual influence can be assumed to constitute a problem for democracy and security policy, individuals' capacity for visual agency becomes central.

Visual agency both creates and is exercised in a visual culture. Mirzoeff (2015) argues that seeing is never neutral. Seeing always requires individual perception and reflection, but as part of meaning creation it also has social and cultural dimensions. All visual material that we encounter in our everyday lives is thus part of, and an expression of, a social context characterised by specific norms, values and ideals. In the research, visual culture is understood today as an object of knowledge related to various forms of visual expression, but also as a research method for visualisation and a research area which concerns the observation of images (Öhman, 2024). Visual culture thus encompasses the entire field of visual studies (Lindgren, 2008), that is to say the whole range of visual and cultural expressions constituted by analogue images, digital images, artistic images, popular cultural phenomena and social media (Ramberg, 2024: 18). For example, the visual culture of children and young people encompasses their own image creation and production, but also their image consumption (Andersson, 2023).

Today, visual agency must also be understood in the light of a digital context where visual culture is underpinned by a specific technological architecture. Visual elements can be reshared and reshaped in the digital space. Technologies go further in their interaction with each other, in "communicative and cultural relations" characterised by dynamic participation (Marner & Örtegren, 2013: 31). For example, the digital world has given rise to a plethora of distinct visual phenomena, such as memes, GIFs and emojis. These can be used to humorous ends, to interpret events, to practice resistance, and to convey political messages (Eriksson Krutrök, 2023: 268). A critical awareness of visual culture can turn democratic citizens into co-creators, with the power to influence (Kellner & Share, 2007).

Visual agency can also play a role in contexts of crisis and war. Social media, both video and image-based, offers a forum for participation and collective meaning-making in times of crisis (Khoury & Hemsley, 2025). In war, platforms can be used for both trauma management and resilience. For example, studies show how TikTok users from Ukraine and Russia express their own personal experiences of grief and war trauma, but also how they are able to transform these individual experiences into collective survival mechanisms (Divon & Eriksson Krutrök, 2024). The mediatised reality of war on video-based platforms, where suffering becomes personal, has also proven fruitful in creating civilian "war influencers" (Kalnes & Bjørge, 2025) with a broader reach among the population.

The dynamics characterising the digital context mean that we need to give close attention to the agency of visual elements. Researchers in visual culture emphasise that visual material has its own agency (Kumpulainen et al., 2013) in the form of influence and action. Images and video material always have a performative effect (Brennen et al., 2021: 281). However, the question of the agency of images is particularly relevant at a time when technologies and large platforms increasingly mediate our social world. Social media users are obliged to adapt to the architecture of the platforms they use, and digital structures affect communication and its norms in a variety of different ways (Khoury & Hemsley, 2025: 11; Ohlheiser, 2022). Furthermore, visual material can now be created with GenAI, then disseminated across digital platforms with the help of algorithms.

Visual literacy in an age of visual influence must therefore be understood as a broad set of competencies (Kalantzis & Cope, 2025). Individuals need competence in source criticism; knowledge of the technical conditions behind the production and dissemination of visual material; and an in-depth understanding of the interpretation of messages, the meaning of visual culture, and the role of visual culture in producing and reproducing specific norms, values and ideals.

Visual Literacy: Competencies

Empirical research on visual literacy is currently limited. Reviews of existing research show that many existing studies are based on informal observations rather than systematic data collection (Matusiak, 2020), which makes it difficult to determine the effect of specific interventions. What is more, different dimensions of visual literacy, including those aspects that have a bearing on the development of individuals' visual literacy, are investigated within different research fields: this makes it harder to conduct systematic studies. Finally, the historical understanding of image production as a domain of artists and craftspeople (Avgerinou & Ericson, 1997) continues to influence research, where the emphasis is on visual literacy as source criticism.

Visual literacy as verification

In the field of didactics, studies have focused on competence in verifying visual material, and researchers suggest that there are lessons to be learned from fact checkers. In journalistic fact-checking, so-called "lateral reading" is used for the verification of digital information, which means that new browser

tabs are opened to review information and images (Caulfield, 2017; Caulfield & Wineburg, 2023). For visual material, dedicated pages or applications for reverse image search can be used (Aprin et al., 2022). Lateral reading then acts as a form of source review where material can be traced back to credible sources, or to its original source (Thomson, 2017: 384). Studies show that reverse image search can serve as a relatively simple yet powerful method for developing visual literacy in the form of verification (Nygren et al., 2021; Nygren et al., 2025). Reverse image search is particularly useful for identifying visual material that has been taken out of context (Nygren et al., 2025). However, there is a risk that individuals who have completed a brief training course will overestimate their own abilities in critical review (Nygren et al., 2025). For this reason, training in verification methods should be combined with exercises that aim to develop a sense of intellectual modesty in participants. For example, Thompson (2018) highlights the necessity of evaluative conversations to increase visual literacy.

However, contemporary research in journalism and communication demonstrates that there are limitations to traditional fact-checking when it comes to verification, especially in the case of AI-generated material (Thomson et al., 2022). Studies show that journalists can find it difficult to verify visual material in general (Himma-Kadaka & Ojamets, 2022). Being able to examine metadata and investigate signs of various forms of image editing and/or AI generation (Thomson et al., 2022: 943) requires further knowledge of more sophisticated digital forensic methods (Farid, 2018). The examination of digital visual material is now a niche field for investigative journalists, whose methods are partly borrowed from open-source intelligence analysis (Dodds et al., 2025: 618). News organisations too are increasingly creating special units for checking digital material (El-Masri & Reese, 2025: 623). Training in verification using open sources is provided by both civil society actors and journalism programmes (Nelliyullathil, 2020). The pedagogy focuses on advanced lateral reading using open-source material, such as satellite images, social media material and public archives (Dodds et al., 2025: 618), as well as developing a journalistic and ethical approach (Nelliyullathil, 2020). This form of verification demonstrates the potential of advanced lateral reading but also shows that it is a specialist skill (Van Puyvelde & Tabárez Rienzi, 2025; Ördén & Vrist-Rønn, forthcoming). Some organisations involve members of the public in reviewing digital material, with a view to creating a greater awareness of fact-checking skills in civil society (El-Mazri & Reese, 2025). Active civic participation in verification can serve as an awareness-raising measure but requires both leadership and coordination (El-Mazri & Reese, 2025: 622).

Visual literacy as interpretation and production

Visual literacy requires more complex skills than just knowing how to verify images and video material. Given that images and video material conveys messages that must be decoded (Eriksson & Göthlund, 2023: 21), people need to acquire skills in interpreting, analysing and producing visual material (Thompson, 2018: 385).

Educational research on the interpretation and analysis of visual material is conducted to some extent within the framework of film and art studies. Just like

language, visual material has its own "grammar" (Nuhoğlu Kibar, 2023). Studies show how students can be made aware of visual messages through a focus on interpretation and decoding (Lundy & Stephens, 2015: 1059). For example, they can be encouraged to examine how characters, expressions, colours, and environments are presented in image and video production (Lundy & Stephens, 2015: 1059). The concept of *Gestaltung* sums up this process, in which not only the subject matter but also the specific design of images affects their meaning. Through group discussions focusing on iconic images, it is possible to further develop a contextual understanding: an understanding of how images' meanings change depending on the context in which they are displayed or produced. This includes both a broader understanding of the historical context in which images were created, but also insight into how iconic images have been used over time, becoming part of an ongoing socio-cultural meaning-making process in different contexts (Thompson, 2019). Here, too, researchers emphasise the importance of self-reflection, where students are asked to consider their own reactions to visual material (Thompson, 2019: 114). This reflective aspect of the interpretation process can be especially important for raising awareness of how visual disinformation can be spread to exploit highly charged socio-political issues.

Empirical studies show that young people lack the competencies required both for interpreting and for producing visual material (Brumberger, 2011). Researchers further emphasise that these two skills are interconnected (Kędra & Žakevičiūtė, 2019: 2). Felten (2008: 61) draws an analogy between image production and writing, pointing out that "just as writing is essential for textual literacy, the capacity to manipulate and make meaning with images is a core component of visual literacy". In line with this broader ambition, where visual literacy becomes a "social practice" for particular ways of seeing (Sturken & Cartwright, 2001), the European Network for Visual Literacy (ENViL) presents a number of sub-competencies (Schönau et al., 2020). They focus on skills needed to produce visual material, generate visual ideas, conduct visual research, create visual images, present images, and evaluate images and image creation processes (Schönau et al., 2020).

A starting point in educational research on visual literacy is that these competencies can be strengthened through exercises (Avgerinou & Pettersson, 2011). Awareness of the visual grammar is a prerequisite for both independent visual production and interpretation. Within the framework of visual production, students can, for example, select and interpret photographs that reflect specific themes (Chai, 2019) or re-photograph existing or historical photographs to develop a visual language (McLeod, 2021: 87). Teaching also aims to develop a more in-depth understanding of image composition, both in theory and in practice, through abstract and figurative exercises (Roshchin & Filippova, 2020: 140). Active visual production can strengthen an individual's creativity as well as their visual abilities (Roshchin et al., 2018). The approach taken by educators is a kind of "pedagogy of consciousness" in which participants are encouraged to overcome obstacles and to have confidence in the visual production process (Roshchin & Filippova, 2020: 139). Finally, analysis of the competencies presented in teaching materials shows that visual production can refer to a range of different objects. The focus may be on everything from

the creation of "simple images" to the development of skills in "visualising basic data [and] creating visual media", to the production of "culturally significant images" (Kedra, 2018: 78). These different areas of focus can in turn create confusion in practical teaching.

Established methods for teaching visual literacy must be partially updated in parallel with the development of GenAI. AI-based image production requires different capacities, skills and knowledge. For example, individuals need to move between verbal and visual thinking when creating text-based prompts and reviewing visual material (Kalantzis & Cope, 2025). A production process of this kind requires skill in the production of prompts, as well as scrutiny of potentially inaccurate visual representations, known as "hallucinations" (Brumberger, 2025). In a teaching context, such representations can be used as an educational opportunity for broader reflection on the starting points, possibilities and limitations of technology (Olson, 2025). Visual literacy in a digital context also requires increased awareness of how AI models risk reproducing different forms of bias and prejudice (Brumberger, 2025). Critical visual analysis of this kind must be grounded in plausibility assessments and judgements about representativeness. This requires broad general knowledge above and beyond the visual arts field (Brumberger, 2025).

Research on visual literacy has considerable potential in terms of developing methods for creating resilience to contemporary visual disinformation. However, very few studies take all dimensions into account. In a context of increased possibilities for visual influence, verification skills must be combined with in-depth understanding of visual interpretation and production. Ultimately, influence is about conveying a message. The ability to decode visual messages, but also to respond to them, is thus a central part of public resilience.

Visual Literacy as Pedagogy

Young people's use of digital media in school environments "tends to be overlooked in didactic-pedagogical everyday life" (Bergström & Hernwall, 2013: 43). Studies show that teachers and pupils alike often make a distinction between factual information and images: facts are coupled with text, which is therefore accorded high validity; while images play a lesser role in factual information and are accorded lower validity (Lundh & Alexandersson, 2012).

In today's digital and media-driven world, students need to be able to use various multimodal applications (Kress et al., 2021). Visual arts as a subject taught in schools has therefore an important part to play in developing students' ability to produce, disseminate and review still images (photography) and moving images (film). Visual arts education provides children and young people with tools to understand how images communicate, influence and sometimes manipulate. This skill is crucial for being able to navigate an information society where visual messages often convey ideological, commercial and political interests or contain pure disinformation.

Through image creation and image interpretation, students can develop their understanding of how norms and values are expressed in images. Visual arts education today could encompass a wide range of visual expressions, with a view to strengthening students' image-critical skills and visual literacy. This

can help develop the ability to resist both influence operations and the negative impact of social media (SOU 2025:19: 160, 181). However, these opportunities for development are often hampered by traditional teaching methods, a lack of digital skills and significant divergences in visual arts teachers' perceptions of their subject (Swedish National Agency for Education, 2005, 2015).

Since image and media consumption in today's society is often overwhelming, reflection on media use is needed to build resilience, to think for oneself and develop critical and analytical skills. Skills that children and young people need to acquire in visual arts education and other image-creating contexts include producing their own messages through combinations of different types of images and texts; analysing images created by others from different genres and environments; and communicating using their own images and images produced by others. The latter can be done through the presentation and viewing of images, as well as through conversations and discussions on various topics that take images as a point of departure.

The development of visual literacy in children and young people is part of the development of their agency. This means that as small children, primary school pupils, and students in formal education in secondary school they are involved in a form of knowledge production where space should be made for their opinions and perspectives. As part of their education, they must be given the opportunity to encounter and engage with multifaceted problems, through artifacts, architecture, design, art and cultural experiences (Swedish National Agency for Education, 2022).

Conclusion: a need for further research

Overall, the review points to a genuine need for studies on both visual disinformation and visual literacy. Today, major social media platforms privilege visual material (Newman et al., 2025: 14). At the same time, most research on disinformation and malign influence still focuses on the text medium, even though conclusions from studies on malign information influence are not directly transferable to visual influence. Images and video are processed differently by the human brain (Weikmann & Lecheler, 2023). Visual material captures attention and offers a context for interpretation (Newman & Schwarz, 2024). This problem is exacerbated by the development of GenAI, where studies show that classic fact-checking does not work as well (Vaccari & Chadwick, 2020). At the same time, existing research indicates that young people, despite a marked proficiency in navigating the digital information environment, often lack the skills needed for interpreting and producing visual material (Brumberger, 2011).

We need to know more about how visual disinformation is used for malign influence, how it spreads, and how its effects differ from text-based disinformation. To this end, we also need a deeper understanding of how the population's resilience to visual influence can be strengthened. A comprehensive approach to the visual dimension of disinformation and visual influence from state actors requires interdisciplinary approaches that can bring together existing knowledge in security studies, media and communication studies, cognitive science, and art and film studies.

As the report suggests, visual literacy offers a possible approach to the problem. However, a key premise is that visual literacy must encompass a broad set of skills. Empirical studies rarely examine the effects of different interventions together. The field is multifaceted, and overviews of the existing research show that much work on pedagogical methods for developing visual literacy lacks a clear methodology (Matusiak, 2020). The more robust studies that have been conducted often focus on methods for developing source criticism skills (Nygren et al., 2021; Nygren et al., 2025). Skills in interpretation and visual production are inherently more difficult to measure, and studies are mainly conducted within the fields of visual arts and film studies. Difficulties in measuring these skills do not make them any less necessary. On the contrary, the ability to decode what an image is intended to convey is of utmost relevance when the verification of visual material becomes more difficult. The transition to communication via video-based platforms also places obvious demands on individuals' competencies in visual production. To determine the effectiveness of different methods for reinforced visual literacy, broadly understood, more systematic and cross-disciplinary research is therefore urgently needed.

Summary:

- Research on disinformation should focus on the visual dimension of influence through interdisciplinary approaches that bring together, for example, security studies, media and communication studies, cognitive science, and visual arts and film studies.

- Interdisciplinary research is needed on how different forms of visual disinformation are used for malign influence and how its effects differ from text-based influence.
- Research should study the rapid development of GenAI, which creates new opportunities for non-state actors to produce sophisticated inauthentic video material for influence.
- More research is needed on how to strengthen the resilience of the population in relation to visual influence.
- Rigorous empirical studies are needed that take an interdisciplinary and transdisciplinary holistic approach to competencies required for the verification, interpretation and production of visual material.
- Further research is needed on how journalists handle image and video material in their everyday work, what needs exist within the profession and how these needs can be met.
- Research-based development of scalable methods for visual literacy is needed in order to reach broader target groups.
- There is a need for more research into the formal teaching of visual arts as a subject at secondary school level.
- There is a need for more practice-based classroom studies looking at visual arts teaching, and more studies of children's visual creativity in early years learning.
- There is a need for more research into how students are assessed in the visual arts as well as studies focusing on the visual arts curriculum.
- Studies are needed on visual literacy and visual competence in children and young people, on digitalisation in education, on multimodality, and on media and information literacy.
- Research is needed on visual arts in informal settings, such as in art schools and other out-of-school activities, and on children's self-directed creative activities.

Summary of the Needs Analysis

The Swedish version of the report includes a needs analysis for visual literacy in Sweden as well as proposals for bolstering research and cultivating greater visual literacy in the general public, with a focus on children and young people. The following summary outlines these recommendations in general terms.

The report's research overview shows that visual literacy should be regarded as a key skill for resisting disinformation. A high level of visual literacy among the population is **a fundamental skill that is of great importance for a country's cognitive resilience**.

In an image-dominated media landscape, visual literacy is also a key competency for citizens to be able **to take part in and actively participate in democratic public discourse**.

Research shows that video-based material is playing an increasingly important role as **a news source, especially for young people**. Visual material on social media is also shared to a greater extent than text-based material. This means that traditional news media can find it more difficult to reach children and young people, while this demographic is also at greater risk of being exposed to visual disinformation.

Greater access to inexpensive and sophisticated AI tools means that the problem of inauthentic image and video material is likely to be even more acute in the future. The visual literacy of children and young people, as well as of key figures in society and the general public, needs to be strengthened.

Visual literacy must be seen as **a broad set of competencies.** The question of **verification** is frequently raised in relation to inauthentic images. However, the particular difficulty of verifying AI-generated material highlights the need for further skills in **interpretation and decoding** of visual messages.

Children and young people's **right to freedom of expression** is enshrined as a right in the United Nations Convention on the Rights of the Child. Creative expression reinforces **visual literacy**, or the ability to interpret images and visual messages, and in doing so counteracts the influence of disinformation.

Research on effective, broader interventions to strengthen visual literacy is currently limited, and studies are spread across a range of different fields, focusing on different skills. There is therefore a need for interdisciplinary studies to investigate methods for verifying, interpreting and decoding visual messages.

Visual literacy is a neglected area of systematic research: **more research is needed** on visual arts teaching in schools and on children's visual creativity at preschool level, along with practice-based classroom studies and work on the digitalisation of education, the modalities of student assessment, and the visual arts curriculum.

There is a great need **for research aimed at developing scalable educational methods with a focus on children and young people** that can be used in formal and informal settings, in secondary schools and in voluntary activities.

The schools are the best place for developing children's and young people's visual literacy. For this to happen, **the visual arts as a subject must be strengthened** and given higher status, the teaching of source literacy needs to be reconfigured to include visual arts, and visual arts needs to be integrated into other subjects such as social studies and history.

Visual arts should be restored as a **core subject in all year groups at school** in order to develop young people's visual literacy. This will also provide young people with more options when choosing future educational paths in creative industries and artistic professions.

Teacher training programmes need to incorporate visual literacy into all subjects that deal with **source literacy, and professional development** should be offered to teachers who are already active in these areas.

Art colleges and universities specialising in visual arts and film have expertise in both visual studies and visual arts education. This expertise is a valuable resource that can be drawn upon to organise commissioned training programmes for key public sector actors and continuing professional development for teachers.

State agencies responsible for media literacy and resilience to disinformation should be tasked with establishing a detailed action plan for enhancing the role of visual literacy in their work and in society as a whole.

Given that most young people consume news on social media, the **public service broadcaster SVT's presence on social media** should be strengthened.

Visual arts and film organisations have in-depth expertise in visual and film literacy. Provided with long-term coordinating structures and increased resources at national, regional and municipal level, these organisations can play a key role in raising visual literacy in and outside schools. They can also raise visual literacy among the general public.

Government agencies responsible for visual arts and film should be tasked and funded to work with visual literacy in the same way as they do with reading comprehension. Increased resources should be allocated to national stakeholders working with visual literacy.

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