



Envisioning AI futures: science fiction, the imagination gap, and its political consequences

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Received: 3 June 2026 / Accepted: 1 July 2026
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Abstract

Dystopian AI tropes, grounded in science fiction, are pervasive in popular culture, but the effects of these narratives on lay orientations toward socio-technological futures remain under-researched. The article distinguishes between imagination (what people can envision) and expectations (what they think is likely), and explores the influence of science fiction on both. Drawing on semi-structured interviews with young adults, we identify an “AI futures imagination gap”: an asymmetry in people’s imaginative capacity, whereby dystopian sociotechnical futures associated with AI and robotics are vivid, coherent, easily elaborated, and often articulated through sci-fi-inflected narrative templates, while utopian sociotechnical alternatives remain abstract, fragmented, and difficult to articulate. Science fiction also shaped expectations in a more indirect way. Participants did not usually consider fictional scenarios as straightforwardly predicting the future, but instead posited that less extreme and modified forms of the problems depicted could be real issues. The findings suggest the problem is not a lack of will to imagine better futures, but a lack of narrative templates: dystopian futures were richly resourced by science fiction, but positive futures lacked comparable support from sci-fi or other cultural sources. This imagination gap may constrain the possibilities of public deliberation and limit democratic capacities for shaping socially desirable futures involving AI. Participatory futures methods such as backcasting may help to cultivate more socially grounded, politically plural and non-technocratic visions of alternative positive sociotechnical orders, but their impacts depend on whether such visions circulate beyond expert settings and enter wider public and policy debate.

Keywords Imagination gap · Sci-fi · Utopia · Dystopia · Future · Artificial intelligence

1 Introduction

Imaginariness on the future of artificial intelligence and robots permeate culture with sci-fi books and films (Schneider 2016). From Isaac Asimov’s short story, *I, Robot* (1950), to films like *Blade Runner* (1982), *Terminator* (1984), *Matrix* (1999) or *Ex Machina* (2014), portraits of the future have strongly overlapped with the worlds of artificial intelligence and robotics. Sci-fi tropes and cultural references circulate far beyond the original works themselves, through stock photos, memes, and everyday conversation, reaching even

people who have never seen the films from which they originate (Dežman 2024a).

While previous research has examined whether science fiction shapes attitudes and perceptions toward AI or amplifies fear (for, e.g., Bruckenberg et al. 2013; Liang and Lee 2017; Young and Carpenter 2018; Bingaman et al. 2021; Brondi et al. 2021; Brewer et al. 2022; Sartori and Bocca 2023; Nader et al. 2024), the mechanisms through which science fiction can influence lay expectations, and how it operates as a resource for imagining futures in a reflective way rather than simply shaping present attitudes directly, have been comparatively underexplored. This article aims to address this gap through a qualitative investigation based on 60 semi-structured interviews with young adults conducted in two waves (2021–2022 and 2024–2025), spanning the period before and after the rise of generative AI. A key feature of our design is that participants were asked to imagine a negative future and a positive future independently of considerations of likelihood and were separately asked what

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they considered probable. This enabled us to disentangle the capacity to imagine futures from the expectation of occurrence and to examine how the two relate.

The question of how science fiction shapes laypeople's expectations of AI and robotics is only seemingly theoretical. It can potentially have serious societal implications. A great body of literature within the sociology of technological expectations argues that present expectations about emerging technologies can significantly influence their future trajectories (Borup et al. 2006; Brown et al. 2017). Jasanoff and Kim's concept of sociotechnical imaginaries extends this insight, showing how collectively held, institutionally stabilized visions of desirable futures animate and legitimate coordinated social and technological action (Jasanoff and Kim 2009). We contend that affirmative and desirable sociotechnical images of the future can also play a crucial role in mobilizing collective and individual efforts to bring such futures into being. However, unlike Jasanoff and Kim's institutionally stabilized imaginaries, our concern is with a more underexplored level: whether individual laypeople possess the cultural resources to envision hopeful sociotechnical futures at all. This raises an important analytical question: do science fiction films and related fictional narratives limit the scope of our capacity to envision hopeful trajectories, or do they instead expand and enable it?

Our main contribution is twofold. First, while previous research has asked whether sci-fi makes people afraid of AI or robots, we argue that an additional relevant question is whether sci-fi constrains what people can imagine about AI and robotics futures. Based on our results, we introduce the concept of the AI futures imagination gap. We define it as a patterned asymmetry in individuals' capacity to imagine and narratively elaborate dystopian versus utopian socio-technological futures, arising from the wider cultural circulation of dystopian templates, especially those popularized through science fiction. We propose that cultural narratives may shape not only expectations and attitudes toward technology, but the very capacity to imagine technological futures.

Second, we draw attention to the potentially problematic political consequences of an AI futures imagination gap for public deliberation and action about sociotechnical futures. We develop arguments in relation to this and discuss possible remedies, such as backcasting, in the *Discussion*.

Additional contributions touch on the role of sci-fi in shaping expectations and how personal experiences with generative AI can potentially contribute to restructuring the hierarchy of resources available to imagine futures.

The place of our investigation was Hungary. However, in this country, as in other countries of the Central and Eastern European region, Western, primarily Hollywood-dominated, science fiction and cinema play a defining role in shaping popular culture. Hence, in our research, we engaged primarily with the traces of Western popular culture, which were

the sources of reference for our interviewees when talking about sci-fi. Cross-national empirical sci-fi studies on AI and robotics have shown the influence of Western culture all around the globe, while distinct cultural specificities are more prominently observed in certain Asian countries (Curran et al. 2020; Bode et al. 2024).

The sample consists of undergraduates studying in Hungary at diverse universities who were not enrolled in STEM programs and had no prior professional experience in technical fields: a young, educated, but non-expert population. The sample composition may have influenced the results: young people's levels of anxiety about the future and technology may differ from those of older generations (Sartori and Bocca 2023), fear specifically related to AI may be lower among younger and more highly educated individuals (Liang and Lee 2017), and it is likely that our participants have been exposed to a greater number of dystopian narratives than older populations (Vint 2021).

2 Empirical and theoretical background

2.1 Sociotechnical expectations and imagination

Scholars in the sociology of expectations argue that anticipations surrounding emerging technologies shape how those technologies are developed, governed, and publicly understood (Borup et al. 2006; Brown et al. 2017). Expectations are social forces that help coordinate actors, legitimize technological pathways, and structure collective visions of the future (Brown and Michael 2003). They can also generate concern, caution, and demands for regulation, thereby influencing technological trajectories themselves (Borup et al. 2006).

Future outlooks can operate at multiple levels. Anticipations may be held not only by individual actors but also by specific groups or broader collectives (Tutton 2017). Not all expectations carry equal weight. Dominant narratives about the future may overshadow alternative perspectives and pathways (Brown et al. 2017). This dynamic can create blind spots, where certain emerging phenomena, trends, or even transformative opportunities, both positive and negative, are overlooked (Beckert and Bronk 2019).

Our study builds on and extends this body of work by analytically distinguishing between expectation and imagination. Within the sociology of expectations, anticipations are socially embedded projections oriented toward plausibility and probability (Borup et al. 2006; Beckert 2016). Imagination, by contrast, is not constrained by likelihood: it concerns the availability of narrative resources through which futures can be articulated at all.

Utopian and dystopian visions are oriented less toward judgments of probability than toward imaginings of desirable

or undesirable futures, and their significance extends beyond assessments of likelihood.

Several authors have argued for the important social role of utopias: as an anticipatory force orienting social transformation (Bloch 1986), a source of critical distance from the present (Ricoeur 1986), and a way of practicing the desire for a better world and a condition for imagining political alternatives (Levitas 2013). For Polak (1973), positive images of the future function as a cultural energy source: societies with vivid, compelling positive visions invest, build, and organize collective effort around them. By making the present visible as a contingent arrangement rather than a natural one, both utopias and dystopias break the sense that things could not be otherwise (Ricoeur 1986; Jameson 2005). Dystopias can serve as warnings about the directions in which existing social arrangements are moving (Moylan 1986). From our perspective, the significance of utopias and dystopias lies less in their predictive credibility than in their capacity to make certain futures imaginable and others difficult to conceive.

Previous literature highlights various factors that can influence how future-oriented ideas take shape, including dominant cultural narratives and the role of mass media (Beckert 2016). While Beckert's argumentation is oriented toward expectations rather than imagination unconstrained by likelihood, the underlying mechanism is transferable: the narrative resources provided by the cultural environment can expand or constrict individuals' capacity to envision futures, including those they do not necessarily consider probable.

2.2 Influence of science fiction on perceptions and expectations about artificial intelligence and robotics

There are competing perspectives in the literature and scientific community on the effect of science fiction on perceptions and attitudes toward technologies (Bruckenberg et al. 2013; Lombardo 2015; Young and Carpenter 2018; Cave et al. 2019; Bingaman et al. 2021; Brondi et al. 2021; Brewer et al. 2022; Osawa et al. 2022; Bode et al. 2024; Dežman 2024b; Chubb et al. 2024; Kumar and Rukmini 2024; Schisler et al. 2024). According to one perspective, the negative, simplistic and sometimes even cliché-like portrayal of technologies by science fiction has a strong and negative direct impact on the views of the public (Pataranutaporn et al. 2023; Bode et al. 2024; Leidecker-Sandmann et al. 2025; Bo et al. 2025). On the other hand, arguing against this perspective, Kitzinger (2010) claims many people are able to interpret science fiction content reflexively and in a sophisticated way, to distinguish that it is only science fiction and that negative content does not necessarily shift the vision of technology in a negative direction. She found in her research in the UK regarding visions on biotechnologies,

that what was seen in science fiction films was not regarded by most to be just a simple indication of what was likely to happen in 'reality' in the future.

We argue that the situation may be more complex than even Kitzinger's approach allows for. What if people recognize that they do not think a dystopian vision will take place in reality, but they do not have the "resources" to develop a positive vision in detail because they do not have the information or content they can relate to with the help of the media or sci-fi films? According to our view, positive visions can be important to be able to act for their realization. This way, it becomes an important issue whether sci-fi films hinder the imagining of positive futures or not.

We conceptualize sci-fi as a narrative resource, following Gamson (1992), whose understanding of media influence moves beyond stimulus-effect models to emphasize "effects in use": media content does not predetermine how a person thinks, but provides material that can be selectively appropriated and used for example in conversations. Besides media discourse, Gamson identified other conversational resources, including discussions with others and personal experience. In our study, we treat sci-fi content as such a resource and investigate how it is mobilized during interviews.

Relatedly, Hughes and Kitzinger (2008) refer to science fiction as a "reference," "shorthand," or "tool": terms that resemble Gamson's resource approach. In their study of UK focus groups discussing emerging technologies, participants used fiction more as a metaphorical or illustrative resource than a source of factual belief. We examine similar phenomena in our interview data.

Western scholars have noted that negative, dystopian science fiction storylines involving science and technology are often popular and can enter the field of public discussion surrounding certain technologies (Kitzinger 2010). Popular Western sci-fi films about AI and robots similarly tend to contain dystopic elements (Brantlinger 1980; Vint 2021; Burgess 2022; Sartori and Bocca 2023). The trope of AI "developing a mind of its own" and turning against humanity is particularly pervasive (Hermann 2023; Hudson et al. 2021) and has been criticized for distracting from present-day AI risks (Hermann 2023).

There are indications that dystopian science fiction might function as a reference point among Hungarian citizens regarding technologies. In earlier and more recent studies conducted by one of the authors, lay participants in Hungary spontaneously referred to science fiction when talking about expectations about biotechnologies and artificial intelligence, particularly when discussing fears and negative outcomes (Vicsek 2011; Vicsek et al. 2024). Feher and Veres (2022), examining attitudes toward AI among members of the Artificial Intelligence Coalition in Hungary, similarly found that interviewees mentioned science fiction when

discussing possible negative future events. However, as these earlier projects were not designed to investigate the role of science fiction in depth, we designed the present study to address this gap.

3 Research questions

This article examines how science fiction influences young people's imagination of future AI and robotics, as well as their expectations regarding what is likely to happen, with particular attention to its role as a cultural resource through which these futures are constructed and articulated. Specifically, we ask:

1. In what ways do science fiction narratives and other cultural resources inform how participants imagine future AI and robotics scenarios, and does this differ between positive and negative futures?
2. How do participants relate sci-fi-inspired scenarios to what they consider likely to happen, and how do they distinguish between imagined and expected futures?
3. How is science fiction mobilized in participants' accounts (e.g., as shorthand references, narrative templates, or illustrative examples)?
4. Through what pathways do sci-fi tropes appear in participants' accounts among those with limited or no direct engagement with science fiction?
5. How does direct experience with contemporary AI systems (e.g., generative AI) shape the role of science fiction in influencing imagination and expectations?

4 Data and methods

The research involved semi-structured interviews with 60 undergraduate students (ages 19–23) studying at diverse universities in the capital of Hungary, Budapest. Two waves of 30 interviews each were conducted: the first between October 2021 and April 2022, and the second between October 2024 and February 2025. The sample included students enrolled in a wide range of programs, but excluded students from Science, Technology, Engineering, and Mathematics (STEM) fields. We also excluded participants working in the IT sector alongside their studies in order to avoid a sample with expert knowledge of AI-related topics. Both the full sample and the two subgroups were balanced in terms of gender (29 female, 30 male and 1 non-binary participant). The sample reflects a youthful, gender-balanced, educated metropolitan population with a lay perspective. Among the participants, 15 reported liking science fiction, while 45 did not, but this was not an aspect of the selection process.

The interview guide explored participants' perceptions of AI and robotics (starting with spontaneous associations), their long-term visions for these technologies (spanning 50–100 years), imagined dystopian and utopian scenarios, as well as their familiarity with science fiction and its perceived plausibility, influence, and role. Participants were first invited to freely imagine positive and negative long-term futures involving AI and robotics, without being asked to assess their likelihood. In a separate part of the interview, they were asked what they actually expected to happen. This design allowed us to compare imaginative elaboration with stated expectations and to observe cases where the two diverged. The interviews lasted between 30 and 60 min; the average transcript length of the interviews was 4200 words.

Interviews have been analyzed with the method of qualitative thematic analysis (Braun and Clarke 2006). First, using a traditional method, we thoroughly read and annotated each interview, then grouped the results thematically and identified characteristic quotes for each theme. This was followed by NVivo coding, through which we coded sections of the interviews to examine internal connections (e.g., whether participants said sci-fi influenced them vs whether they spontaneously mentioned sci-fi references in the former parts of the interview). We also compared participants' stated perceptions with their actual behavior (e.g., whether they claimed it was easier to imagine a positive or negative future vs. how much and how vividly they actually described each).

5 Results

5.1 Sci-fi as a lens or resource for dystopian futures

Invited to imagine a negative future involving AI and robotics, participants drew on a recognizable set of resources. Importantly, they were not asked to describe scenarios they expected to happen; rather, they were asked what negative futures they could imagine, regardless of how likely they considered them. What they expected to actually happen was explored separately in the interview.

A clear pattern across both interview waves was the tendency to invoke science fiction when imagining negative futures.

Interviewer: If you imagine a very negative future to which robots and artificial intelligence contribute, what would it be like?

Interviewee: Something like in movies, dystopian—when everything is in flames, and you're running away, people fighting against robots. A kind of serious civil war, humans against robots. That's the worst I can imagine... Maybe robots would operate at a kind of

dictatorship level, and there would be oppression of humans. Then we might live in smaller civilizations. But this is probably some kind of movie reference, I don't know the title, but I can imagine a world like that.

(2025_30_m)

Many participants spontaneously named iconic sci-fi films to illustrate negative scenarios. The first image that came to mind for many interviewees was from the movie *Terminator*, highlighting how deeply the *rogue AI* trope has permeated public imagination. Others mentioned *The Matrix* or dystopian TV series like *Black Mirror* as touchstones for technological doom.

Respondents did not have to go into detail often to explain, as they expected the interviewer to have a shared understanding of what such a dystopia would look like, based on bringing up the films.

They typically used these references to illustrate ideas or engage in thought experiments, rather than as predictions of what would actually happen:

“a really bad worldview, that robots and AI will actually do everything for us, and we won't be useful anymore. And people need something to feel like they're doing something, so to speak, and not sitting at home all day like in WALL-E” (2024_17_f).

“[in the movies] there is such emotional connection between the artificial intelligence or robot itself and the human being that it then becomes a complication... I couldn't imagine that it would be so... that it would trigger an emotional connection in me.” (2021_28_f).

Sometimes participants abbreviated their negative scenarios by referencing a well-known sci-fi work (such as *Terminator*) and assuming shared knowledge with the interviewer. This “shorthand” or “reference” effect (Hughes and Kitzinger 2008) was observable in roughly one-third of the sample. For example, in response to the question about how they imagined a distant negative future, one participant simply said: “Like the Matrix!” (2022_12_f).

Uprising, machine dictatorship, humans becoming not needed anymore, and alienation were among some of the themes discussed for negative scenarios.

5.2 Challenges in envisioning utopian futures

When the conversation turned to positive or utopian futures, a strikingly different pattern emerged. Whereas negative futures were readily elaborated with the help of science fiction references, positive futures largely lacked this narrative support. Participants generally struggled to be as confident as they were with dystopias. Many could

express hope that AI and robotics would improve society, for instance, by curing diseases or taking over dangerous jobs, but their descriptions tended to remain abstract or brief.

“Healthcare and education would be much better, and the level of security would be higher in every country.” (2022_10_m).

Fewer sci-fi examples came to mind to inspire optimistic futures: only a few explicit references to positive science fiction representations were identified across the interviews (*Star Wars*, *Elysium*, and *Her*).

While utopian futures were harder to elaborate, participants drew on a range of resources, and some of the respondents were able to imagine them in detail. These resources included own imagination and extrapolation from current AI developments (picked from media, discussions with friends and family members or videos from the internet), games (in a few interviews) and shorter positive segments of sci-fi films (idealistic depictions before the narrative conflict arises). Especially in the newer wave of interviews, extrapolation from current AI developments based on one's own experiences with AI was more characteristic. The results suggest that the scarcity of utopian sci-fi narratives has left an imagination gap, though contemporary AI developments and personal experiences are beginning to fill that space. However, this often results in imagined futures that are not substantially different from the present in terms of either technological development or social organization.

“I would imagine it's something like how robot vacuums help, everything basically operating automatically in a smart way. Smart homes have already been developed, where you could just tell things to turn on or off, and then we could control everything in the house by voice. This would make our lives much easier.” (2021_23_m).

“I imagine that tasks which are time-consuming, but which a robot can carry out much more easily, would obviously be delegated to them, we would allow them to perform those tasks. Such as washing the dishes, cooking, and cleaning.” (2024_29_f).

‘Ease’ was by far the most dominant theme in the utopian visions, particularly in the 2021–22 interviews. Most participants emphasized that one of the primary functions of robots and AI could be to assist humans and ensure comfort in everyday life:

“I imagine such an almost idyllic coexistence between humans and robots, where they are there to serve and help us” (2022_09_m)

5.3 Dystopian vs utopian futures: perceived ease of imagination

More than half of the interviewees stated that it was easier to talk about a negative future, compared to a smaller portion who found it easier to describe a positive one.

Those who found the negative future easier generally emphasized the greater availability of representations and narratives, among which science fiction films play a particularly prominent role:

“Definitely the negative one (is easier to imagine), because there is a lot more representation of that, precisely because there is more potential for drama or story than in a positive vision where everyone is happy, and everyone is satisfied.” (2021_32_m)

A certain element of wishful thinking was also detectable among some participants. While many acknowledged that sci-fi films typically depict negative scenarios, some interviewees nevertheless claimed it was easier to imagine a positive future, explaining that they strive to remain optimistic and envision such a future for their children. It is thus possible that some participants claimed the positive future was easier to imagine for them, even if this was not actually the case:

“I think a positive one was easier to imagine. I think because I assume it’s more likely and I want it to happen, it’s easier to imagine. It is safer.” (2024_18_m)

At the same time, a few interviewees explicitly expressed a desire for more science fiction narratives that present positive futures, stories that not only help envision what kind of future to avoid, but also support imagining the kind of future to strive for:

“We should have positive utopias as well in order for us to strive for that reality and go forward that way. Because if we do not have a way to go, we just keep going blindly into a techno-optimistic future where it’s just the technology that’s advancing, and we’re just constantly adapting to it. And... we’re not developing technology for a future we want.” (2024_08_m)

5.4 Influence of sci-fi and separating fiction from reality

Throughout both periods (2021–22 and 2024–25), interviewees pondered how much science fiction had actually shaped their expectations of AI and robotics. Some participants openly acknowledged that movies and series had influenced them, sometimes more than they realized at first. However, the 2024–25 participants were more likely

to express a reduced reliance on sci-fi narratives to form their AI expectations. Several interviewees noted that their views had shifted over time. This indicates that as real AI technologies become more integrated into daily life, they are competing with sci-fi as a frame of reference.

According to their own accounts, the vast majority of participants reported being influenced by science fiction. Only 8 individuals out of the 60 stated that they did not perceive any such influence. However, all but one of these eight spontaneously referred to sci-fi during their interview anyhow. This suggests that even those who perceive themselves as unaffected by science fiction might also still draw on it.

While most participants spontaneously mentioned films as influences on their thinking, they typically could not name specific titles beyond one or two examples, such as *Black Mirror*, *I, Robot*, or *Wall-E*.

Beyond these self-reports, the interview data reveal an even broader pattern: most participants (50 out of 60) made spontaneous references to science fiction at some point during their interview, not only when specifically prompted by the interviewer. This figure captures not perceived influence but actual discursive behavior, and it underscores the extent to which sci-fi functions as a readily available resource for thinking and talking about AI and robotics.

The AI trope portrayed in sci-fi films seemed to influence even those who do not watch such films or like the genre, as exposure to these themes can occur independently of viewing the movies themselves: through popular culture references such as machines subjugating humans (e.g., *The Matrix*) or AI exterminating humanity (e.g., *Terminator*). Thus, for some individuals, science fiction exerts its influence not directly but through popular culture or social interactions. Even without having seen such a film, one may still know of takeover tropes:

“Honestly, sci-fi never really hooked me, so I don’t watch that. So, any kind of takeover and stuff like that that we were talking about before, I either hear it from other people or I see it on the internet just for funny jokes.” (2021_33_f)

“I haven’t seen *Terminator*, and even I am influenced by it.” (2021_31_m).

Some of our interviewees argued that the visions of AI futures presented in sci-fi films are harmful in the long term, and that even they themselves find it difficult to fully dissociate from them, even though they would like to.

The negative portrayals of AI in sci-fi films can also produce a boomerang effect: a few respondents adopted a critical stance toward these films and, as a result, developed a more positive personal perspective on AI.

A recurring theme was how participants negotiated the boundary between sci-fi and real-life expectations. Most were keenly aware that the dramatic scenarios they cited

were fictional constructs. At the same time, the persistent use of sci-fi references suggests these stories function as more than entertainment; they serve as accessible cognitive resources for thinking about complex technological issues. Some participants readily acknowledged that while they had internalized sci-fi tropes, they did not expect reality to unfold as depicted in films. Others expressed a more ambivalent stance, recognizing sci-fi narratives as exaggerated but still useful for raising awareness about ethical risks. For certain respondents, dystopian sci-fi was framed as a resource that prompts critical discussions about technology. Sci-fi was regarded more as a thought experiment than a forecast. Results indicate that while science fiction was an accessible resource for discussion, it did not necessarily dictate how participants expected the future to unfold.

Most respondents believed that films portray robots and AI in a negative light:

“Four out of five robot films are about them taking control over us” (2024_04_f).

At the same time, they also considered the futures envisioned in these films to be exaggerated and unrealistic. However, this did not mean that they completely rejected what is depicted in science fiction. The overwhelming majority considered what they see in science fiction at least partially plausible. Only six participants explicitly stated that science fiction is entirely unrealistic, while just two regarded it as highly realistic. The typical attitude was that sci-fi contains a kernel of truth but enlarges it dramatically:

“I think they all have a little bit of truth in them, but that they are terribly amplified” (2024_09_nb).

Several participants noted that the negative tone of these films is often necessary to provide a compelling narrative foundation, to attract viewership, as they are more engaging for viewers:

“The purpose of books and films is to be watched, and that obviously requires some kind of sensation or conflict or struggle. So, they’re not painting the future” (2022_09_m)

For some, films initially shaped their associations, but reflection led them to distance themselves from those visions:

“When we started talking, my first thought was the Matrix and the Blade Runner. [...] When I think about it, I think it’s not going to happen (like that), but the first image that comes to my mind is this.” (2022_12_f)

In general, highly negative future visions were perceived as only partially feasible and projected into the distant future, typically 100–200 years. Dystopian futures suggested by sci-fi were largely viewed as unrealistic happening to

this degree, with respondents assigning low probability to their realization. In contrast, moderately positive visions, particularly those centered on the ‘ease’ narrative, where robots support everyday life, were more commonly regarded as achievable.

However, there were one or two exceptions who believed that what is shown in these films might be plausible and some interviewees argued that AI’s recent rapid development makes science fiction appear more realistic.

5.5 Comparison of interviews before and after ChatGPT

A key difference between the 2021–22 (pre-ChatGPT) and 2024–25 (post-ChatGPT) interviews concerns the role of lived experience in shaping expectations. In the earlier wave, AI remained largely speculative. Many participants had no direct encounter with advanced AI systems, and discussions were framed in abstract, future-oriented terms, even when they were asked about present associations. Several explicitly noted that their only experiences involved basic digital assistants such as Siri, which they did not regard as genuine artificial intelligence. In this context, science fiction often functioned as the primary resource for structuring visions of AI’s future.

By contrast, in the 2024–25 interviews, AI had become a tangible and everyday reality. Many participants had interacted with ChatGPT, Midjourney, or similar applications, and their expectations were increasingly grounded in these experiences. AI was no longer treated primarily as a distant possibility but as an integrated feature of daily life. This shift reduced reliance on sci-fi narratives as the dominant interpretive frame and redirected attention toward more immediate ethical and societal concerns, including misinformation, job displacement, and the fairness of AI-driven decision-making.

At the same time, reactions were not uniform. Some interviewees interpreted the rapid development of AI as partially validating sci-fi anxieties (e.g., if ChatGPT already communicates fluently, what might follow?), while others felt that hands-on experience exposed the exaggerations of fictional portrayals. Overall, direct engagement with AI appears to have tempered reliance on cinematic tropes.

A similar shift emerged regarding creativity. In 2021–22, participants often assumed that AI would not be capable of genuine artistic production for the foreseeable future, if ever: “the kind of creativity that a human has, I don’t think a robot will be able to match in the foreseeable future” (2021_27_m). By 2024–25, this assumption had largely disappeared; instead, some participants expressed concern that generative AI may already be encroaching on artistic domains previously considered uniquely human.

6 Discussion and conclusions

Most centrally, our findings point to an AI futures imagination gap among our interviewees: respondents elaborated dystopian scenarios with markedly greater ease than utopian ones. They drew on sci-fi as a form of culturally embedded narrative grammar, not merely a “shorthand” or reference (Hughes and Kitzinger 2008), but a structure of plots, turning points, and recognizable character roles that makes certain futures cognitively accessible and others difficult to articulate. The persistent use of iconic narratives such as *Terminator* and *The Matrix*, even by participants who had not seen these films, suggests that certain sci-fi tropes have detached from their source texts and become circulating cultural myths (Lombardo 2015). This helps explain a key paradox: participants who reflexively distanced themselves from sci-fi as exaggerated or unrealistic nevertheless found it markedly difficult to construct equally elaborate positive scenarios. The primary difficulty was not one of belief, as most did not expect dystopian futures to materialize as depicted, but of narrative infrastructure. Without positive narrative templates, actors may lack the framework to articulate desirable technological trajectories. It becomes necessary to ask: what or who can fulfill this role if sci-fi is not capable of it?

Our argument resonates with, but also differs from, the “AI story crisis” diagnosed by Chubb et al. (2024). We similarly argue that certain AI stories are missing; however, whereas they emphasize the absence of realistic narratives and call for greater attention to them, we stress the importance of narratives marked by greater utopian ambition. We therefore argue for elaborated positive visions, not in the sense of myopic solutionism that conceals structural inequalities behind technological optimism, but in the sense of critical utopias (Moynan 1986) capable of articulating desirable social arrangements and generating the imaginative scaffolding that our participants lacked. In this way, we foreground a structural deficit in imagination, rather than merely distorted attitudes.

Beyond shaping the imagination, sci-fi also served as a partial resource for expectations, though its influence on them was markedly different from its role in structuring imagination. Participants’ approach to science fiction can be characterized as a form of reflexive judgment (Kitzinger 2010): they actively negotiated its plausibility, typically accepting that underlying concerns have a basis in reality while rejecting specific scenarios as genre-driven exaggerations. Several noted that dystopian narratives raise important questions about control, dependence, and autonomy regardless of their fictional packaging, and some observed that the rapid development of generative AI had made certain scenarios appear less far-fetched. A few participants

displayed what we term a boomerang effect: confronted with perceived excessive negativity, they developed a more positive personal stance toward AI, illustrating that sci-fi can function as a dialogical resource that some people think against. A related implication is that real concerns about AI may be dismissed precisely because they resemble sci-fi plots, their resemblance to fiction undermining rather than reinforcing their perceived seriousness.

Many participants also engaged in temporal distancing: considering sci-fi scenarios plausible only in the very distant future (100–200 years), effectively acknowledging that some elements of sci-fi narratives may eventually materialize while defusing their urgency for the present. Our research, therefore, challenges simplistic assumptions about “sci-fi-induced fear” in our sample of young, educated adults. The influence of sci-fi on expectations was thus not absent, but partial, indirect, and mediated by reflexive judgment. These findings indicate that sci-fi influences are better conceptualized not as fixed stories directly shaping expectations, nor simply as convenient shorthand labels, but as culturally embedded frameworks that structure how people think about technological futures, whose power persists even when their content is reflexively dismissed.

The temporal distancing described above has consequences that extend beyond the individual level. If the most culturally vivid AI and robot risks are associated with distant, sci-fi-like scenarios (machine uprisings, human obsolescence), while more immediate challenges (algorithmic bias, labor displacement, misinformation) lack comparable narrative salience, public discourse may be poorly calibrated. Research on psychological distance suggests that threats perceived as far-off tend to elicit weaker motivation for present-day action (Trope and Liberman 2010). We found that dramatic but remote risks captured the attention of our interviewees, while proximate and actionable concerns remained underarticulated, especially before the generative AI shift. Our findings resonate with the analytical framework proposed by Bory et al. (2025), who distinguish between “strong AI narratives”, centered on general artificial intelligence, superintelligence, and existential human–machine conflict, and “weak AI narratives,” which address the functioning and implications of actually existing AI systems. They argue that the disproportionate cultural circulation of strong AI narratives risks diverting public attention and strategic resources from the ethical, social, and economic challenges that current AI systems are already raising. Our empirical data lend support to this concern and extend it. Our interviews reveal that the strong/weak imbalance is not only a feature of media and policy discourse, as Bory et al. demonstrate, but also can be reproduced in lay individuals’ imaginative capacities: participants’ dystopias were overwhelmingly strong AI narratives (sentient machines, uprisings, civilizational collapse, radically reorganized social

orders) projected 100–200 years into the future, whereas their utopias closely resembled weak AI narratives (smart homes, robot assistants, incremental convenience) typically remained close to the present: extrapolations of existing convenience rather than visions of transformed societies. This temporal contraction of positive imagining is itself a symptom of the narrative deficit: without elaborated utopian templates, participants could extend current trends but not reimagine social life more fundamentally.

Our results also show a shift in the weight of interpretive resources: from sci-fi in the direction of personal experience after the emergence of generative AI. This illustrates how the arrival of publicly accessible AI systems can reconfigure the hierarchy of interpretive resources. Sci-fi lost its exclusive authority once personal encounters became available. However, even personal experience did not prove sufficient for many participants to imagine futures with ease.

This study is subject to several limitations related to sample size and composition. The research was conducted with a small, non-representative sample of Hungarian university students in Budapest, and the findings therefore cannot be generalized statistically. Nevertheless, the repeated emergence of similar themes across interviews suggests that the identified patterns may extend beyond the empirical setting. Focusing on young adults and this specific urban sample might also exert influence in the results, as we discussed it in the Introduction section. The cultural context of Hungary could have further potentially influenced the results. However, as mentioned earlier, Hungarian popular culture is strongly embedded in Western Anglo-Saxon science fiction traditions. No locally specific sci-fi references emerged in the interviews. These factors should be considered when interpreting the findings and assessing their potential applicability to other social groups or national contexts.

Despite these limitations, our findings carry relevant practical implications. The existence of socially debated, credible, and engaging positive future visions is important: such visions could provide shared reference points for deliberating what kind of future is desirable and worth collectively striving for. If they are absent, the capacity to imagine alternative futures remains constrained, and with it, the ability to shape them.

One promising approach is participatory backcasting, a futures methodology that starts from a collectively envisioned desirable future and works backwards to identify the steps needed to reach it (Robinson 2003). Backcasting is designed to address precisely the kind of deficit our research has identified: it requires participants to articulate normative visions, thereby generating the positive imaginaries that our respondents struggled to produce on their own. In a backcasting study with AI experts (Köves et al. 2025), it was demonstrated that structured participatory methods can yield normatively rich and interconnected visions: the concept of

‘entangled AI’ that emerged from that research, an AI deeply interconnected with well-being, nature, and justice, exemplifies the kind of substantive, debatable positive imaginary that was largely absent from our interviewees’ repertoires. Moreover, the narratives that sci-fi most effectively amplifies tend to be strong AI narratives (Bory et al. 2025), whereas backcasting, while not constrained by present conditions in its visioning phase, is oriented toward the social embedding of technology, what AI should do for society rather than what it might become, and thus tends to generate visions attuned to weak AI concerns: justice, well-being, democratic governance, and the everyday consequences of algorithmic systems. In this sense, backcasting could contribute not only to closing the imagination gap but also to rebalancing the types of AI narratives that circulate in public discourse. Closing the imagination gap would benefit from not only more participatory foresight exercises focused on AI and robotics futures but also deliberate strategies to bridge their outputs into wider public discourse through collaboration with media creators, integration into educational settings, public engagement initiatives, and policy communication. Other initiatives, such as the Worldbuilding contests organized by the Future of Life Institute,¹ in which contestants write fictional short stories imagining a plausible, positive world in 2045 where major crises have been averted (Hilden 2024) or the participatory world-building workshop at the ACM FAccT 2026 conference, represent emerging efforts to cultivate the kind of shared positive imaginaries that our findings suggest are currently lacking from mainstream discourse.

Ultimately, the value of closing the imagination gap lies not in arriving at a single positive vision, but in enabling a genuinely plural debate about desirable sociotechnical futures. If multiple credible and elaborated positive visions were to circulate in public culture, public discourse could shift from asking only “what do we fear?” to asking “what kind of future do we want?”. This could enable citizens, policymakers, and developers to deliberate between competing visions, debate their trade-offs and underlying values, and identify the conditions needed to bring preferred futures closer to realization. Such a shift, however, requires sustained institutional attention. Backcasting exercises and participatory foresight initiatives remain largely confined to expert workshops and academic settings; for their outputs to reshape broader public debate, they need to gain visibility and become part of the wider conversation about AI futures. The question of what kind of future we want must move from the margins of specialist exercises to the center

¹ For more information see Future of Life Institute: Worldbuilding Competition – Building positive and plausible visions of a future with AI: <https://futureoflife.org/project/worldbuilding-competition/>

of public and political discourse. At the same time, any such effort must reckon with the fact that “desirable futures” are not universally shared. Societies are stratified by class, geography, and power, and visions framed as human-centric or beneficial for all of humanity may disproportionately reflect the interests and assumptions of wealthy populations in the Global North (Vicsek and Tóth 2023). Positive future-making with AI must therefore not become a vehicle for legitimizing existing power asymmetries or whitewashing the agendas of technology firms. Rather, the plurality we advocate requires that marginalized groups and competing interests have genuine voice in shaping which futures are imagined, for whom, and on whose terms. Without such visions, the politics of AI remains largely reactive, focused on preventing harms rather than actively shaping a desirable and more just future. The barrier to shaping socially desirable futures involving AI and robotics may lie not in a deficit of public will, but in the uneven distribution of narrative resources through which alternative futures can be articulated, debated, and collectively pursued.

Acknowledgements The authors would like to thank the interns for their assistance with the research and Alexandra Köves for reviewing and commenting on the discussion section.

Author contributions L.V. conceived the study, primarily designed the research, organized and supervised the data collection, developed the overall structure and theoretical framing of the article, and wrote the majority of the manuscript. R. P. contributed to the qualitative analysis of the interviews, drafted sections related to previous literature on science fiction and attitudes toward AI, prepared an initial version of the empirical analysis section, and contributed first drafts of selected paragraphs in other parts of the manuscript. He also contributed to the interpretation of the findings and provided comments and revisions throughout the development of the article.

Funding Open access funding provided by Corvinus University of Budapest. This research was supported by National Research, Development and Innovation Office, (Grant OTKA K142207).

Data availability Data is available on request from the authors.

Declarations

Competing interests The authors declare no competing interests.

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