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Résumé de l'article

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Generative AI and Argument Creativity

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Abstract: Generative AI appears to threaten argument creativity. Because of its capacity to generate coherent texts, individuals are likely to integrate its ideas, and not their own, into arguments, thereby reducing their creative contribution. This article argues that this view is mistaken—it rests on a misunderstanding of the nature of creativity. Within arguments, creative and critical thinking cannot be separated. Because creativity is enmeshed with skills such as analysis and evaluation, the use of generative AI in the construction of arguments, especially in the role as universal audience, has the potential to heighten, not diminish argument creativity.

Résumé: L'IA générative semble menacer la créativité argumentative. En raison de sa capacité à générer des textes cohérents, les individus sont susceptibles d'intégrer ses idées, et non les leurs, dans les arguments, réduisant ainsi leur contribution créative. Cet article soutient que cette vision est erronée. Cela repose sur une mauvaise compréhension de la nature de la créativité. Au sein des arguments, la pensée créative et la pensée critique ne peuvent être séparées. Puisque la créativité est étroitement liée à des compétences telles que l'analyse et l'évaluation, l'utilisation de l'IA générative dans la construction d'arguments, en particulier dans le rôle d'auditoire universel, a le potentiel d'augmenter, et non de diminuer, la créativité argumentative.

Keywords: arguments; creativity; generative AI; universal audience

1. Introduction

The ability of generative AI to produce coherent and often relevant arguments seems to threaten a core human capacity: argument creativity. Generative AI, as the name suggests, is very good at generating ideas. It can generate innumerable thesis statements, reasons, and conclusions. It can cross disciplinary boundaries, replicate arguments, and mimic the voice of established thinkers. With so much on offer, it is difficult to see why people would not tap into this trove of creativity, supplanting their own ideas with

those provided by generative AI. Creativity, then, will become the domain of generative AI, while the identification, selection, and/or evaluation of those ideas will rest in the hands of the user.

This article argues that this concern is unfounded. Generative AI is not a threat to argumentative creativity, but a powerful new tool to augment it. The key to understanding why this is the case is to appreciate the extent to which critical thinking skills, especially analysis and evaluation, are enmeshed with creativity. No neat division between creative capacity and critical thinking is possible. Consequently, individuals can partner with generative AI, leveraging its generative capacities, and remain creatively engaged in the construction of arguments.

If creativity is intertwined with critical thinking skills, it may seem that a natural extension of my argument is that generative AI is also not a threat to critical thinking. This article will not go that far for two reasons. The first is that critical thinking is not a single skill, but the combination of many. Because so many skills are at play, the thesis that generative AI does not undermine critical thinking deserves its own separate defense. The second is that the focus of this argument, creativity, plays into the strength of generative AI: generation. By focusing solely on the question of creativity, it is easier to provide straightforward, actionable advice on how to use this technology to immediately improve arguments.

I defend my argument over the next six sections. In the next section, I define creativity, distinguishing among the many types. Section three explains how this definition has been applied to AI in general, and generative AI in particular. Section four focuses on the expression of creativity in arguments, drawing on authors such as Bailin (1987), Baumtrog (2017), and Johnson (2013) to defend a view in which the skills of critical thinking are tightly interwoven with those of creativity, making it impossible to fully separate the two. Section five brings together the insights of sections three and four to explain how generative AI can heighten argumentative creativity. Section six provides concrete examples of how to use generative AI creatively in the construction of an argument. The paper concludes in section seven.

2. What is creativity?

The standard definition of creativity holds that “persons or processes are creative to the extent that they produce creative products, and a product is creative if it meets two conditions: in addition to being *new* it must also be *valuable*” (Paul and Stoker 2023). As with most complex or challenging concepts, not all theorists agree that these two conditions capture all that is needed to classify something as creative.

Boden (1994, 2004, and 2009) adds the requirement that a process is only creative if it results in an outcome that is *surprising*. Other researchers (Kronfeldner 2009; Gaut 2018) have suggested adding qualities such as *original*, *spontaneous*, or *agential* to the standard definition. They each note potential counterexamples to the standard definition in defending their addition. *Original* is needed to exclude (intentional) copies of other creative works. The addition of spontaneity precludes the mere application of algorithmic rules to produce a creative work. Some go further and argue for the need of a (human) agent behind the creative process to avoid counting natural wonders, such as snowflakes, among creative output (Paul and Stoker 2023).

Because the output of generative AI easily meets the standard of original—it does not copy but generates the likely next token in a string—we will ignore that potential addition here. We will also not engage with the requirement of spontaneity. The neural net and its resulting states are so complex that it is currently impossible to describe each step of the process used to generate its output (Wolfram 2023). Whatever is happening inside the neural net of a large language model, it is not the simple application of an algorithm to produce a result.

Instead, we will focus on Boden’s addition to the standard definition, surprising, and then turn to her discussion of the role that agential might still play in understanding this concept. We will do so partly because her work is so influential in the philosophy of creativity, but also because it is so well developed. Her careful and subtle position further delineates different types of creativity, while leaving space for the concerns of those who believe that “true” creativity may require a human agent. This combination of detail and argumentative reserve is an excellent departure point

from which to answer the question of whether generative AI will undermine or enhance human creativity.

3. Generative AI and creativity

Before the recent widescale introduction and adoption of generative AI, Boden (1998) argued that earlier, less complex examples of artificial intelligence *appeared* to produce work that is creative. They did not necessarily generate output that is creative for the species—what she terms, *H-creative*, or historically creative—but they did generate creative outputs for themselves, or what she terms, *P-creative* for psychologically creative. For something to be judged as creative, we rarely invoke the need for it to be original within the history of humanity. P-creativity is all that is needed, and that is the standard by which we will judge whether generative AI has the potential to enhance the creativity of arguments.

Within P-creativity, and by extension H-creativity since it is derivative on the efforts of an individual, there are, according to Boden, three further types of creativity, each of which differs in how the element of surprise is expressed in the creative process.

There is the surprise that can result in the combining of existing concepts, or combinatorial creativity. Take for example the invention of the folding bike. Emmet Latta, the inventor of the foldable bike, took the concept of a bike, and added the possibility of folding it in half to make it easier to transport and maneuver (Changebike 2020; Allegany County Historical Society, n.d.).

There is surprise that results from exploring what Boden terms the “conceptual space” of a process. This conceptual space defines a “culturally accepted style of thinking” (Boden 2009, p. 25). Identifying a new outcome or product by exploiting previously “unexplored” terrain of a conceptual space, such as the addition of a new element to the periodic table in chemistry, is a form of creativity too.

The final type of creativity for Boden is transformative. For a creative process to be transformative, the individual must transform the conceptual space to generate something wholly new and unexpected, even impossible by the previous requirements of that human endeavor. This is possible by changing or removing what

was previously considered an inviolable dimension of that conceptual space (Boden 1998, p. 348).

With these definitions in hand, Boden concludes that (earlier, less effective) AI appears to exercise creativity. Previous generations of AI can combine existing ideas to generate new, surprising, and valuable works, such as the writing of puns—bad puns, but puns nonetheless. Note the use of the word, “appear.” Boden limits her claim to the appearance of creativity, not creativity full stop. This is because, for Boden, whether artificial intelligence is creative depends on how we respond to a whole host of related questions, most of which focus on properties we associate with human agents, such as whether creativity requires consciousness, intentionality, and whether computers could be part of the “human moral community” (Boden 2009, p. 33).

Generative AI has wholly surpassed these earlier AI models’ creative capacities, at least in the combinatorial and exploratory creative spaces. The release of OpenAI’s chatbot resulted in a torrent of AI-generated poetry, stories, and other examples of writing being shared on social media networks. Subsequent research has confirmed this initial reaction, demonstrating that generative AI’s output is often judged as being as or more creative than that of humans. For example, professors at three top-ranked business programs used human judges to rate ideas for innovative products generated by ChatGPT against those of their students. The average quality of ChatGPT’s ideas was judged higher than that of the students (Girotra et al. 2023, p. 6).

Similar creative success has been found in exploring the conceptual space of some domains. Many companies are busy integrating generative AI capabilities into their applications and software. An example of how much generative AI can enhance the ability of a program is provided by Autodesk, a manufacturing design program. With the addition of generative AI, it is now possible to provide a goal and some design parameters and receive in return all possible permutations meeting those specifications (Autodesk n.d.).

As remarkable as these advancements are, they do not reply to Boden’s concern. We are no further along in answering the fundamental questions about what is required for something to be

“really” creative, specifically whether consciousness and intention are required by the agent. Without answers to these questions, what we can conclude is that the output of generative AI appears to be creative, but whether it should be judged to be authentically creative, is a question that is unresolved.

Fortunately, we do not need to answer the question of whether generative AI is really creative to respond to the problem of whether it will enhance human creativity in arguments. It is enough that its output appears creative to us. The reason that we do not need to resolve this fundamental issue is because of how creativity is generally thought to manifest itself in arguments.

4. Creativity and arguments

Bailin (1987) explains that creativity and critical thinking, as it applies to arguments, are often considered separate fields with creativity confined to the generation of ideas or the breaking of rules that define an area, while critical thinking concerns the analysis and evaluation of argument. In reality, no such clean division between the two concepts is possible.

Creativity is clearly needed in the initial formulation of an argument. The hypothesis or idea that will be defended must be crafted or identified as must reasons to support that claim. Possible responses should be considered as well as what conclusions follow from the argument. Each step of this process requires imagination, and if originality is a goal, creative verve.

Once ideas are generated and assembled into an argument, so the traditional view goes, the argument should be analyzed and evaluated. It is here that the arguer is to deploy a new set of skills that are distinct from creativity: those involved in critical thinking. Individuals are to assess their work with the goal of improving it. They should seek to refine the claim of their argument, strengthen the evidence supporting it, or tighten its structure.

Thus, we have a clear division of labor according to this description of argument construction. There is the initial creative, generation phase followed by an analysis and evaluation of the initial burst of creativity by the critical thinker.

What the traditional view misses is that the evaluation and analysis of arguments also requires creativity. As Bailin (1987) argues:

I think that it can also be demonstrated that critical thinking is not merely analytic, selective, and confined to frameworks, but has imaginative, inventive, constructive aspects. Definitions of critical thinking generally refer to assessing on the basis of reasons ... but such assessments are not generally clear-cut or mechanical. They require an imaginative contribution on the part of the assessor. Even within traditional subject areas which are considered technical, the reasoner must go beyond the confines of the given information, supplying imaginative constructs (Bailin 1987, p. 25).

Critical thinking cannot be neatly cleaved from creativity; they are intertwined.

Because individuals are neither omniscient nor all equally endowed with the imaginative capacities necessary to evaluate and analyze an argument, many argumentation theorists suggest that the reasoning be discussed with another individual, sometimes called the 'Other' in the literature (Johnson 2000; van Eemeren 2010; Tindale 1999; Baumtrog 2017). The Other can act as a sounding board against which to test claims and reasons as well as offering advice on how to improve the initial argument.

As Baumtrog (2017) discusses at length, there are some serious drawbacks to depending on the Other while constructing an argument. The first and most obvious is that there may be no one around to help. The second is that other individuals are as flawed as the person developing the argument. Human reasoning is shot through with bias and shortcuts that increase speed but reduce accuracy (Kahneman 2011). The Other may also have the same or worse imaginative skill as the arguer, leading to little improvement in the overall argument.

Consulting with more than one Other can improve the situation but only when stringent conditions are met. Research shows that individuals benefit when they reason with people who are informationally and/or socially diverse (Laughlin and Hollingshead 1995; Page 2008; Sunstein 2009; Woolley et al. 2010). Informationally diverse individuals bring different knowledge, opinions, or points-

of-view to an argument. The most common example of this is a team made up of different professionals, each of whom has a unique set of skills and knowledge. Equally valuable are those who are socially diverse (Phillips 2014; Phillips and Loyd 2006). People with different genders, races, and ethnicities do not share the same experience of the world. They too may have unique points of view or information to share with a group.

Even when these conditions are met, serious challenges abound. As anyone who has worked with others knows, diversity in and of itself will not, and cannot, guarantee better results. Communicative ability, emotional acumen, and social norms matter enormously to the success of any group. So, for groups to reason well, or at least better than an individual, it not only matters who argues, but how they argue.

The importance of social and emotional cues in the ability of groups to reason well together is highlighted in research by Cass Sunstein and Reid Hastie. They identify two main problems that can hurt the ability of a group to reason together harmoniously:

The first involves informational signals, which lead group members to fail to disclose what they know out of respect for the information announced by others. The second involves social pressures, which lead people to silence themselves to avoid reputational sanctions, such as the disapproval of relevant others” (Sunstein and Hastie 2008, p. 2).

These two factors lead to failures in discussions, all of which can produce conclusions that are inferior to the work of any one member of the group alone.

So individuals who rely on other individuals to improve their arguments face a series of hurdles. They must find individuals who are available, are socially, intellectually, or otherwise different than themselves, and must ensure that these individuals have strong social, communicative, and psychological acumen.

Given all of these potential pitfalls of relying on humans, researchers suggest that individuals imagine the Other, playing both advocate and devil’s advocate in the construction of an argument (Baumtrog 2017). The Other, in one influential interpretation by Perelman and Olbrechts-Tyteca (1969), should be thought of as a

universal audience. This audience is abstracted from a real audience and is imagined as all “reasonable” people (Tindale 2013, p. 520). The universal audience is not a perfect audience; it is instead dispassionate and lacking in the self-interest that can undermine the pursuit of truth when arguing.

As an ideal, the universal audience is a helpful construct because it helps us to identify best practice in the evaluation and analysis of an argument, but as Johnson (2013) points out, it doesn’t seem to reflect actual practice. Reflecting on his own experience, Johnson notes that he first drafts claims and reasoning before turning to the analysis and evaluation of what he has written so far. When engaged in this second step, he does not imagine an idealized universal audience, but individuals who have different points-of-views or those who are likely to raise specific objections because of their beliefs and intellectual commitments. He imagines a series of individuals, not a theoretical construct of a universal audience (Johnson 2013, p. 545).

Johnson seems right in his criticism of how the Other is cashed out in the universal audience. Actual practice seems much more grounded in particular voices and experiences in arguing with others.

Hence one good way to improve the creative capacity of individuals when constructing arguments would be to train their capacity to imagine these potential responses, much as an expert such as Johnson does. Baumtrog (2017) offers advice on potential ways in which this imaginative skill could be developed in individual reasoners. He argues that we should work to enhance individuals’ abilities to

create/imagine/think up (1) the appropriate number and diversity of considerations and counter considerations; (2) which are appropriately relevant to the occurring reasoning or argumentation; while (3) attributing the appropriate role and weight to each” (Baumtrog 2017, p. 144).

Indeed. It would be good to develop in reasoners all the capacities listed by Baumtrog, but as even his short description hints, they are highly context-dependent, complex skills that are not easily

taught. Baumtrog does not try to explain how they will be cultivated either, recognizing the difficulty of the task.

So, we are stuck. The common advice of turning to the Other to assist with the evaluation and analysis of an argument is far from ideal. Individuals are likely to be flawed, in many of the same ways as the person developing the argument. Adding more individuals to the process will not necessarily help as they can amplify the original issues as well as introduce new ones. And more pressing, no one may be available to do this work when it is needed. Depending on yourself is a possibility, but this requires highly developed imaginative skills, as well as extensive knowledge, making it difficult to use self-reliance as an alternative to relying on other people.

Here is where we see the real potential of generative AI. It is an excellent universal audience, meeting many of the desired qualities of that construct. It is reasonable. Not perfectly reasonable because it is the distillation of the texts of millions of humans, but it certainly meets the standard proffered by Perelman and Olbrechts-Tyteca. And because it is not human, it is neither passionate nor self-interested. Finally, it is always available.

Generative AI offers a third way to evaluate and analyze arguments, replacing actual humans and the imagined Other with a new, exciting option: an artificial universal audience. It has some drawbacks, as will be discussed in the next section, but generative AI can help to enhance the creativity of an argument. In fact, creativity is where this technology shines.

5. Generative AI: An artificial universal audience

Generative AI takes a textual input from a user, a prompt, and generates a response by predicting what is likely to come next in the sequence. These predictions lead to responses that are often relevant and coherent, which is surprising given that at its core, these texts are not based on any knowledge of the world but on a complex analysis of the probability of the next token in a string.

Undergirding this statistical power is a large language model. The training of the model begins by feeding it (literally) trillions of examples of texts, which it analyzes by first taking an input, say a

sentence, breaking it into parts, called tokens, which may or may not correspond to the words of the sentences, and analyzing the contexts in which each token is found. This analysis is turned into information about each token that the large language model can use to make predictions about its likelihood to appear next in a string (Brown et al. 2020).

What is remarkable about the initial training is that it happens with no direction from humans. The model is not given instructions to search out parts of speech or gender or plurals. It must discover the features of language on its own. Whether it discovers a category of words called “nouns” or that this category has a singular and a plural form is unknown. The actual content of the information it creates after analyzing the context of a given token, the embedding, is unknown. We do know that similar words have similar embeddings, but what the information in the embedding refers to is a black box.

After the initial training is complete, often referred to as the “pre-training,” the outputs may be further refined by a process called reinforcement learning by human feedback (RLHF). Humans either produce or label desired outputs, which are then used to train a large language model to “align” its output more closely with what a human would find useful or correct (Ouyang et al. 2022). The model requires this extra step of supervised learning because there can be a big gap between the problem of generating the next token that is statistically probable and a response to a prompt that is helpful.

At no point during this process are the models given direct guidance or information on what their output means. Models may glean some semantic information from the text on which they are trained. For example, logical entailment is an aspect of meaning that is syntactically mediated and so accessible to a model. Pragmatic information, which often depends on recognizing the intentions of a speaker, is even less accessible to large language models. In short, generative AI does not, and cannot, understand the meaning of what it generates.

This lack of understanding has given rise to a serious problem: hallucinations. Generative AI cannot distinguish between true and false claims, which leads it to sometimes confidently “make things

up.” It should be noted here that generative AI does not lie. Lying requires an intention to deceive the audience, and generative AI has no intentions. Its only goal is to produce the next token that is statistically likely to follow another token.

The problems with large language models do not stop at hallucinations. Because the training data on which the models are trained is shot through with bias and other problems, generative AI can produce text that is equally biased or problematic. So, in addition to making false claims, generative AI can make biased, false claims.

It is, however, very reasonable. The pre-training and subsequent fine-tuning of the model has molded it to react very rationally to prompts about the content and structure of an argument. Not all its suggestions will be true, and some might be biased, but all will be rational.

The key, then, to using generative AI as a partner in the construction of an argument is to acknowledge that although rational, it is flawed. This requires extra vigilance on the part of the user. They must always be ready to screen out false claims and to reject those that are biased or otherwise hurtful. This requirement is hardly new though. Those who test their arguments against an Other, whether another person or imagined, have always needed to guard against these flaws. The difference here is that more care may be necessary. The phenomenon of hallucination is so remarkable because people rarely fabricate so blithely. But more care is possible and because it is, the drawbacks of generative AI should not prevent individuals from using this technology as a universal audience.

Generative AI is an excellent audience against which to test arguments, seek out oversights, and identify potential counterarguments. Individuals should use generative AI’s ideas when judicious and reject those that are ill-advised. This interplay is not a ceding of creativity, but an enhancement of it. Analysis, evaluation, and selection require imagination and creative interpretation. Users are forced to interpret the suggestions of generative AI and mold them to their own argumentative ends. Far from submerging creative capacity, partnering with generative AI in this way forces individuals to exercise it constantly.

As promising as this sounds, individuals may not want to work with a synthetic partner. A chatbot looks like a poor substitute for a human. And perhaps it is a poor substitute for the best of us, but compared to average individuals, generative AI has many advantages. As discussed in the previous section, although reasoning in groups yields superior results to reasoning alone, what is required to make such a group successful is practically impossible. Not so for generative AI. For starters, intellectual diversity is always guaranteed with generative AI. Because it is not limited to one point-of-view, knowledge base, or theoretical framework, it is always informationally different than any one individual.

In contrast to generative AI's amazing capacity for intellectual diversity, its social sensitivity is not as impressive. It cannot read the emotions and thoughts of others. Lacking these skills, it cannot alter its responses to better fit the mood of an individual or forestall an objection. But it is not a social nightmare. Generative AI will never seek approval, worry about its reputation, or attempt to climb a social ladder. It will not amplify the cognitive bias of another nor (intentionally) hide information. Generative AI does not judge. It will never (willingly) socially censure an individual for seeking feedback or advice. In fact, when working with generative AI, there are no social or emotional waters to navigate at all.

Moreover, because generative AI is not human, the user can engage in some helpful, but socially odd behavior without repercussions. They can abruptly stop an exchange and return to it later, picking up the conversational thread as if nothing happened. They can ask for clarifications, summaries, or restatements in simpler language or even in another language. It does not mind repeating things nor experimenting with tiny changes. In fact, even under attack, generative AI will almost always keep its composure. ("Almost always" because it may occasionally reply in kind, even with the many guardrails that researchers are seeking to put in place to guide its interactions.)

Finally, generative AI is a good, but not great, communicator. It will never interrupt someone in a conversation, but it will also not jump in with relevant information. Unlike discussing ideas in a diverse group, a situation that can facilitate the serendipitous

exchange of ideas, generative AI must always be prompted to contribute. Once asked, however, generative AI is a very willing partner in any dialogue.

On balance, working with generative AI is not comparable to discussing an argument with a group of individuals who are intellectually diverse, socially sensitive, emotionally aware, committed to the pursuit of truth, and gifted communicators, but it is a lot better than what we most commonly experience: discussing things with ordinary people. I do not think, therefore, we should worry unduly that generative AI will be dismissed out of hand as a potential audience for an argument.

The concern, then, that generative AI will limit or deny argumentative creativity is misguided. It is based on a false cleavage between the analysis, selection, and evaluation, or traditional skills of critical thinking, and the generation and rule-breaking of creativity. There is no such divide, even when working with generative AI. Creative and critical thinking must continuously work together if a coherent and convincing argument is to be developed.

6. How to use generative AI to enhance argument creativity

There are many possible ways in which generative AI can be used as a universal audience. I assume throughout that the initial argument has been shared with the technology. Recent versions of generative AI, for example GPT-4, can analyze approximately 25,000 words of text, making it straightforward to share most complete arguments prior to partnering with generative AI. For arguments that exceed that length, individuals can share a summary that fits the current limitations.

For the core of the argument, the thesis statement or main claim, generative AI can offer alternative wordings as well as different potential thesis statements based on the reasons or evidence provided in the argument. Whether these options improve the argument is at the discretion of the arguer.

If the individual who is evaluating the new choices is unsure, it is possible to engage in a discussion about the relative merits or demerits of the options. Some may be clearer. Some may be more original. Some may be better supported by the evidence in the

argument. Generative AI can provide its own analysis of the original versus competitors, leaving the arguer with a rich source of possible alternatives to the initial statement.

Like the thesis statement, generative AI can also provide alternative statements of reasons or evidence or identify completely new avenues of support. Here again, it is up to the individual to evaluate these possibilities, but among them can be options that fall outside the knowledge or theoretical commitments of the arguer.

The best use, I think, for most arguers, is to replicate Johnson's practice of how he imagines the Other when evaluating his own argument. Recall Johnson's description of his interaction with members of his universal audience. He imagines the specific response of individuals to what he has written, seeking ways in which to respond to potential criticisms of his argument. He does not accept their assessment of his argument—as wrong—but instead uses their potential rejections to strengthen his own thinking.

Generative AI can provide many kinds of counterarguments to what is written. It can do so in a neutral voice, but it can also take on specific roles. If the critic is well known, and their writings are likely to be part of the pre-training because they are available on the web or summarized in an open-access resource such as Wikipedia, it is possible to ask generative AI to criticize an argument in that voice. For those who are so inclined, examples of the writing of that individual can be provided to the technology, then it can be asked to criticize the argument using what has just been added by the user.

The ability to interact with critical perspectives is an amazing use of generative AI. No longer limited by the imagination of the individual, nor in the case of an actual person, the generosity or inclination of the critic, generative AI can provide a fresh perspective on what is written. This gets at the heart of how this technology can improve the creativity of arguments. It forces the arguer to engage with foreign or unimagined responses. Integrating what would previously be either unthinkable or, for many of us, inaccessible, improves the evaluation of the original argument.

But there is more. Generative AI allows us to tap into some truly wild methods of evaluation and analysis of an argument. Because generative AI is a master of syntactic form, it can present the original argument in a myriad of new ways, not (necessarily) altering the content but changing the tone, style, or type of prose. Here are a few examples of how an argument can be presented anew:

- The original argument can be rewritten as a dialogue between two individuals. Once rewritten, the voice of the dissenter can be rewritten to fit different points of views or theoretical commitments. This is a fascinating exercise to see how others might respond to the main points.
- The writing level of the argument can be lowered or raised. So, for example, an argument can be rewritten for a young child or an interested 12-year-old. By lowering the level of reading comprehension required, new ways of presenting information may become clear.
- Text-to-image generators can produce a graphic representation of the argument or parts of it. Completely outside of anything so far imagined by argumentative theorists, this new modality has the potential to really change the frame of reference of the claims, evidence, and conclusions in an argument.

This short list is only the beginning. The flexibility of generative AI makes it well suited for many creative uses in the context of argumentation.

One possible rejoinder to this use of generative AI is that it can never produce a truly transformative idea. Generative AI can change or combine, but it cannot break outside of whichever paradigm in which it is working. That is because its initial training limits what it can generate. Moreover, because it seeks to produce tokens that are statistically likely, it is best at generating texts that are common, unoriginal. We do not, however, require that an idea be transformative to be creative. We laud such discoveries but change and/or combination are more than enough for whatever is produced to clear the creativity bar.

Another worry is that by using the technology in this way, generative AI is really the one writing the argument, not the individual. I think that this rejoinder fails to appreciate how interwoven creativity and critical thinking are. I am not suggesting that generative AI write the argument, but rather suggest ideas or changes, very much the way a real person would. The selection of the ideas, the inclusion of them in the argument, and the overall presentation can still remain in the hands of the individual. In such a case, we would not normally say that the individual who has used someone else's suggestion lacks creativity, although we may acknowledge their input.

In fact, I would go further and say that generative AI can enhance creativity in the construction of arguments in new, and hitherto ignored ways. The most obvious use of generative AI to enhance argument creativity is to use it for some of the initial generation of ideas also. Generative AI is an amazing brainstorming partner. Before ever writing a word of an argument, it can generate a multitude of possible thesis statements, potential reasons in support of those claims, and conclusions that follow.

The potential use of the Other as a brainstorming partner is not, to my knowledge, discussed in the literature but it should be. There is little to distinguish this initial generation of ideas and the subsequent discernment and evaluation by the individual from a later use in which it produces alternatives to the ideas of the arguer. Consequently, I will treat this potential use of generative AI, one in which it generates ideas initially, as another example of how this technology can enhance the creativity of arguments.

There are many ways to use generative AI to brainstorm. The technology can be prompted to generate ideas. It can be used as part of a formal brainstorming technique, such as round-robin brainstorming where the individual and the technology each provide an idea in succession, or the use of five *wh*-questions, where potential causes of a problem are explored using *wh*-questions such as "Why?" and "When?"

Once ideas are generated and then selected by the arguer, further brainstorming techniques can be used to refine the ideas. SCAMPER, which stands for substitute, combine, adapt, modify, put (to another use), eliminate, and reverse, is one that can be

applied to an idea to generate alternatives. However the initial generation of ideas for an argument is done, generative AI can be an excellent tool in creating more and better possibilities for consideration by the individual developing the argument. That too can be a valuable addition to the creativity of an argument.

In sum, there are two ways in which generative AI can be used to enhance the creativity of an argument. The first is to use it as a universal audience to whom the argument is addressed, seeking ways in which to improve the argument's rationality by crafting a thesis, evidence, and conclusions that best respond to the concerns of others. The second is to use it for idea generation, analyzing and evaluating the ideas offered for their inclusion in the argument. Although not usually part of the discussion on creativity in argumentation, there is little to distinguish this initial use of generative AI to enhance creativity from a later use when the idea under consideration is the sole authorship of the individual if we acknowledge that creativity is tightly interwoven with critical thinking.

7. Conclusion

The threat of generative AI to argumentative creativity recedes once the role of creativity in argument construction is properly defined and understood. As has been argued throughout this paper, creativity is not distinct from critical thinking but consistently works with those skills to produce a final argument. Generative AI has the potential to augment our creativity by providing an artificial universal audience against which to sharpen and improve that final argument.

Does it matter that generative AI is not actually creative in the sense that it is not an agent or lacks specific intentions to create anything at all? I don't think so. It is the individual who is analyzing and selecting the material to be used in the argument who retains the role of agent and/or intentions and so, picks up where generative AI drops off. The creativity lies in the combination of skills and abilities between human and technology, not in either alone. There is consequently no reason to believe that generative

AI will be the end of creativity in argumentation; it has every promise of being a new beginning.

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