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How far can we go in computer-assisted debating?

Fino a che punto possiamo spingerci nel dibattito assistito dal computer?

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Abstract

This article discusses whether computer-assisted debating may overcome several challenges of human debaters, including cultural/language biases and disabilities as well as physical constraints of time and distance. After briefly reviewing the history of debating assisted by computers, the article examines how computers can assist various steps in debating, and then examines some challenges debaters face and the question of unfair enhancement of performance in sports and debating. Finally, the article proposes a set of principles and rules in debate competitions with computers. In conclusion, some questions are raised about the attempts to overcome time constraints with "cybernetic avatars."

Keywords: Debate; Computer-Assisted Debating; Computer-Mediated Communication; Forensic Competition; Argumentation.

Sintesi

Questo articolo discute se il dibattito assistito dai computer possa superare diverse sfide dei dibattenti umani, compresi pregiudizi culturali/linguistici e disabilità, nonché i vincoli fisici di tempo e distanza. Dopo una breve panoramica della storia del dibattito assistito dai computer, l'articolo esamina come i computer possano assistere in varie fasi del dibattito e poi analizza alcune sfide che i dibattenti affrontano, nonché la questione dell'ingiusto potenziamento delle prestazioni nello sport e nel dibattito. Infine, l'articolo propone un insieme di principi e regole per le competizioni di dibattito con i computer. In conclusione, vengono sollevate alcune domande riguardo ai tentativi di superare i vincoli temporali con "avatar cibernetici".

Parole chiave: Dibattito; Dibattito assistito dai computer; Comunicazione mediata dai computer; Competizione forense; Argomentazione.

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1. Introduction

This article will discuss whether computer-assisted debating may overcome several challenges of human debaters, including cultural/language biases and disabilities as well as physical constraints of time and distance. In this article, "debate" and its related terms primarily refers to a broadly defined "academic debate" practiced for educational and competitive purposes, i.e., a communication process in which the two opposing sides defend their side and criticize the opposing side in order to convince the third party judge/audience of their relative merits (Ziegelmueller & Kay, 1997; Freeley & Steinberg, 2014; Aleles & Inoue, 2020). In a typical "academic" debate round, the debaters represent the either side of the given proposition not necessarily consistent with their personal opinions. In a typical debate round, arguments are orally delivered with various degress of assistance of writing. The process of debate starts from the setup of the proposition (called "resolution" or "motion" or simply a "topic"), followed by a series of speeches (and often question-answer sequences), and completed by an announcement of the judges' decision, often with evaluative feedbacks as well as the reasons for the decision.

In the following sections, I will first (in Section 2) review historical development of computer-assisted debating, then Section 3 will give some details as to which part of the communication process in debate may be assisted by computers. I will discuss, in Section 4, what kind of challenges debaters experience in terms of language, culture, physical and mental disabilities, as well as some "physical" constraints that advanced technologies are trying to overcome, such as time, space, and human body. In Section 5, I will propose a set of principles and rules for computer-assisted debating and raise some philosophical/ethical questions concerning "cyber avatars" which might revolutionize our human cognition and mind/body integrity.

2. History of computer-assisted debating

In this section, I will review the history of major practices of how debating has been assisted by computer technologies.

2.1. Researching

Perhaps the earliest use of computers in debating was researching the topic area to analyze the resolution and to collect evidence to support prepared arguments in American style "Policy Debate" or evidence-based prepared debating. In British-style or "Parliamentary" debate, i.e., extemporaneous debating, debaters do not use computers to find information after the debate topic ("motion") is announced. Debating is not directly assisted by computers; debaters might be assisted by computers as part of daily reading activities not necessarily for debating. For example, a guide to a parliamentary style of debating gives this advice to competitors:

> «One final bit of advice is to use the Internet to your advantage—stay well-read and up-to-date on current events (since many cases will be relevant!) and stay connected on social media and the Forum [of the APDA], where there are opportunities to ask questions, ask for help, and potentially find people to give you feedback». (APDA, n.d.)

In my personal recollection, when I was debating in college 1976-1979 in Japan in a "Policy Debate" style (called "Academic Debate"), researching evidence was limited to print sources. During the 1985-1986 seasons, when I was a graduate student at the University of Tsukuba, Japan, I had limited access to library databases and personal access to commercial database services via Delphi and CompuServe, connecting directly to their systems via an "acoustic modem" by making international voice calls[2]. Wider use of the Internet came much later in 1990s when a world-wide web browser became popular.

2.2. Writing speeches and briefs

Writing has been supported by technology from the beginning of its history (papyrus, brushes/pens/pencils and paper), and then typewriters, before computers were invented. Manual and electric typewriters are not computers. When I started debating in college in 1976, I was using a manual typewriter and then an electric typewriter for speech manuscripts and typing evidence cards (later in the form of briefs) in English. I had access to a Japanese-language typewriter around mid-1980s at home but did not use it for debating because it was essentially a mini type-setting machine and very slow.

During the 1985-1986 seasons above, I was using a computer to type speech manuscripts and briefs but did not really use it for storing them. They were printed and stored in file folders and card boxes. In those cases, debating was assisted by computers by increasing legibility of manuscripts and evidence cards. To a limited degree, speech manuscripts and briefs were stored and reused, or edited, and all saved on floppy disks used in desktop computers. Since they could not be accessed during the debate rounds in tournaments or classrooms, all files must be printed on paper and sorted and indexed.

Sometime later, came portable word-processors, which looked like a laptop computer with a built-in printer. You could carry them around while travelling to tournament sites, but they were not used during debate rounds but new or updated manuscripts and briefs were printed in the hotel room or in the campus building and handed to the teams.

2.3. Remote debating

One of the fastest growing areas of computer-assisted debating is online-debating, or computer-mediated debating, often to overcome the physical/geographical distance between participants. Some earlier attempts included the use of broadcasting systems such as TV and radio, as well as SCS (Space Collaboration System). Later, various internet-based tools have been used such as email, video conferencing (CU-See-Me), virtual

2. A life with using various computer services in the 1980s is vividly described by Michael Banks (2008, pp. xi-xviii).

worlds (Second Life, SONY's Community Place), and dedicated debating platforms[3]. All those systems are more or less assisted by computers as a background infrastructure of connection. In many systems, computers are used as terminals from which debaters go online, which inevitably allows them to use other computer functions while debating.

2.4. AI debaters

The use of AI (Artificial Intelligence) was highlighted by the rise of IBM's debater robot "Project Debater" (Levy *et al.,* 2014; Slonim *et al.,* 2021); the project started in 2012 after the IBM's mixed results in research and development with "Deep Blue" and "Watson." There are a number of other AI or NLP (natural language processing) research projects that deal with argumentation and argumentation-based decision making in the form of debate and extracting argument data from debate (e.g. in Japan, Sakai *et al.,* 2020; Yanai *et al.,* 2016; Sato *et al.,* 2015). An earlier programmatic proposal is found in Tandon (2014) when he proposed a sketch of a debate system based on the US policy debate format and style. Some key components in such systems are (1) identifying arguments, (2) evaluating arguments, and (3) connecting relevant arguments. They are also keys to NLP in general. American "team policy debate" as well as some other styles of competitive debating has been very much assisted by computers in researching the topic, collecting and storing evidence, writing briefs/speech drafts, and even note-taking called "flowsheeting" in these several decades (Cram, 2012), it is just a few steps forward to fully automated debating like IBM's Project Debater, which is going to the upper limit of the computer-assistedness[4].

2.5. COVID restrictions on classroom attendance and travelling

Most recent developments in computer-mediated debating, or computer-mediated communication in general, have been accelerated by the sudden, almost panicking needs for remote meetings in various contexts including debating (Rief, 2021; Inoue, 2022). Almost all classroom and extra-curricular debating went online using existing technologies and ad-hoc developments of various tools. In Kyushu University around myself, debating had been assisted by Moodle, Microsoft's Office (Word, OneDrive, Excel, Teams, etc.), Google docs/classroom, Slack, and video/audio conferencing (Skype, Zoom, Google Meet, Teams, LINE, etc.). Debating platforms like Mixidea (https://mixidea.org/) had been tried slowly but suddenly became the mainstream. Those online communication tools had been used supplementarily in a debate round participated by debaters from physically distant places but became "normal" after

3. More details of the reviews are available in debate-related works (Inoue, 1999; 2022; Snider, 2000; 2009; Rief, 2021). When Alfred Snider, one of the world leaders of the debate education wrote an inspiring article in *The Rostrum*, the official publication of the National Forensic League of the US, to advocate more internet debating with his empirical achievements, it is interesting to note that another US director of debate wrote an article to caste doubts on internet debating (Berube, 2000).

4. While this article was under the peer-review process in 2022-2023, generative AIs such as ChatGPT started to attract popular attention and they will certainly create new potentials and problems in debating. I will discuss them in a separate work.

the COVID restrictions of shutting down classrooms and prohibiting travels.

After this brief review of historical developments of available computer tools in debating, I will outline the process of debating[5] that may be assisted by computers.

3. Computer-assisted process of debating

Computers are involved in all the process of debate, as I have reviewed in Section 2 above, the entire ongoing process of debating including research before a debate round starts. The focus of this section, however, is a limited communication process in a debate round where speeches are given and responded to.

3.1. Computer-mediated debating

The communication process in a debate round is cyclic but it may start with a debater making an argument as a speaker, i.e., the production process:

(1) Argument conception: Arguments are constructed in a human debater.
(2) Encoding to texts: Arguments are encoded into linguistic texts (oral or written).
(3) Vocalization: Arguments are vocalized as oral speech.

On the hearers' side, other debaters and judges or audience, the reception process involves:

(1) Hearing the speech.
(2) Decoding the speech signals to linguistic texts.
(3) Understanding the texts as arguments.
(4) Evaluating the arguments.
(5) Argument (response) conception----- This step is fed into Step (1) of the production process; thus communication becomes cyclic or continuous.

In all steps of communication, computers may be used to mediate, assist, or enhance the human performance; or even further, all the steps are processed by computers, realizing a robot debater in the next section.

3.2. Autonomous debating system

This involves advanced AI-based complex systems (Reed, 2021) such as IBM's "Project Debater" but it is also schematically presented by Tandon (2014), who was a high school "policy" debater:

> «(A) Case Dissection Algorithm
> (B) Argument Classifier
> (C) Argument Knowledgebase
> (D) Strategy Engine (to evaluate arguments)
> (E) Response Scheduler»

Different from IBM's and above Tandon's completely autonomous AI debating, "computer assisted debating" concerned in this article is realized by a relatively low-tech system. The most difficult processes of argument creation, argument recognition, evaluation, and responding are operated by human

5. Certainly, this review is not exhaustive; e.g., tournament management heavily relies on computers and specific systems like Tabroom.com and Tabbycat.

debaters, thus retaining the debate as a human activity, albeit assisted or even enhanced by computers.

3.3. Augmented reality: body, brain, space, and time

Another, in a sense more radical, development is possible in line with the Japanese government's new research innovative "Moonshot" R&D Program. Its "Goal 1"is «Realization of a society in which human beings can be free from limitations of body, brain, space, and time by 2050» (Japan Science and Technology Agency, 2020). We have already seen an avatar robot overcoming some of the bed-ridden patients' limitations of going out to do things in the physical world (Vikkelsø *et al.,* 2020; Takeuchi *et al.,* 2020). The sense of "communication proxy" with virtual avatars may be promising in the current technology, not to mention growing popularity in fictions (Cf. Friedman & Hasler, 2016). Hologram avatars like "Hatsune Miku" vocaloid have already gained popularity in pop cultures (Guga, 2015). On-site debate rounds may be participated by such avatars if the tournament rules allow their entry. In this situation, human debaters will only be "assisted" by computers, but if technology use is further expanded, their integrity and agency as well as the fairness in competition may be significantly altered, which raises a serious concern to be discussed below.

3.4. Technologies: essential assistance or unfair enhancement?

Some of the issues surrounding "computer-assistedness" in debating can be better understood when we look at comparable issues in another competition, athletics. In fact, competitive debating is often portrayed in a way similar to competitive sports[6].

There are controversies over technology enhancement in para sports competitions, most notably the cases of Oscar Pistorius. His amputee "blade" allowed him to walk and run but it may also improve his running performance beyond his original physical leg could have achieved. There are other athletes with disabilities participating in Olympics with technological assistance like a wheelchair (The New Zealand Herald, 2006; Burkett, 2010).

International Association of Athletics Federations' Competition Rules 2018-2019 give this rule about outside assistance:

> «Rule 144.2. Any athlete giving or receiving assistance from within the competition area during an event (including under Rule 163.14, 163.15, 230.10 and 240.8) shall be warned by the Referee and advised that, if there is any repetition, he will be disqualified from that event». (International Association of Athletics Federations, 2017)

Rule 144.3 gives some examples including:

> «(c) Except for shoes complying with Rule 143, the use of any technology or appliance that provides the user with an advantage which he would not have obtained using the equipment specified in, or permitted by, the

6. For example, CSTV, an American college sports channel followed college debate competitions and produced their documentaries (CSTV, 2005).

> Rules. RULE 144 88 IAAF COMPETITION RULES 2018-2019
> (d) The use of any mechanical aid, unless the athlete can establish on the balance of probabilities that the use of an aid would not provide him with an overall competitive advantage over an athlete not using such aid». (International Association of Athletics Federations, 2017)

The following conclusion of the article about Olympic/Paralympic performance does apply to debate competition when you talk about computer in modern policy debate:

> «Although there have been improvements in the mechanical function of some assistive devices, the question of 'performance enhancement or essential for performance?' is surely still heavily weighted in favour of essential for performance. The challenge for the future is to ensure that technological advances are matched to the functional needs of the athletes, and there is equity of access». (Burkett, 2010, p. 219)

When delivering a speech, understanding it, and note-taking, the use of a computer is probably considered an "essential assistance" but not "enhancement" for speaking/hearing disabled debaters as well as some physically handicapped competitors, who have trouble with handwriting in competing in the current debate tournaments but if technologies develop further, their performances will be "enhancement" in near future.

Even now, for many EFL students (not competitive debaters in tournaments) participating in classroom debate, the same technologies are "performance enhancement" as I observed in my English classrooms when they struggled with hearing English and fluently reading a manuscript[7]. They also resort to computer translation to write not only prepared constructive speeches but also more extemporaneous rebuttal speeches. They were able to deliver more effective (intelligible) English speeches by translating from Japanese than speaking in English from the scratch with some assistance of an electronic dictionary, which is allowed in many EFL tournament rules. Speech synthesis is more toward the enhancement side for some debaters; if they are better at writing than speaking. Once the texts are produced, a computer can read them more fluently than many less proficient language learners.

The controversy is also related to a more general issue of athlete classification, especially about gender. A notable case is about Caster Semenya, who was disqualified to compete in women's sports because of her high level of testosterone, which enhances physical performance (Loland, 2020).

Another analogy to sports may be drawn between debate and sports competition; Open/ESL/EFL categories of the WUDC tournament are analogous to weight classes in combat sports such as wrestling and boxing. While weight categories are commonly used, "height categories" are not used but there are potentials (Dubnov-Raz *et al.,* 2015; Bešlija *et al.,* 2021). Similarly, in place of language status/category, debate tournament may want to consider "computer-assistedness" categories.

7. Accuracy of translation from Japanese to English has improved greatly recently and EFL writing instructors have started to incorporate it into language classrooms (Rushton, 2022).

On-site tournaments and virtual tournaments share many rules but there are some differences. In line with the inclusive debate advocacy, the default mode of delivering a speech is through computer devices, i.e., "computer-mediated" and there will be concerns about "computer-assisted" debate for physically and mentally challenged debaters, and unequal/unfair "computer-enhanced" debating, ultimately leading to an autonomous robot debater.

A truly open-class tournament is eligible for any one (machine or human) that can deliver an oral speech. Further classifications will include but will not be limited to:

(1) Autonomous robot debaters: Arguments are generated by computers and delivered by computers.
(2) Physical avatar debaters: Arguments are generated by humans and vocalized by humans.
(3) Voice synthesizer debaters: Arguments are generated by humans and vocalized by computers.
(4) AI-assisted human debaters: Arguments are completely/partially generated by computers and vocalized by humans.

In this way, inclusivity and enhancement should be sorted out and formalized.

A common and naïve notion of one major difference between "(British) Parliamentary" extemporaneous debate competition and "(American) Policy" prepared evidence-based style is whether speeches in debate rounds are completely written up. But there are various degrees of preparedness in both styles. The first speech in a policy round (1st Affirmative Constructive) is usually completely written up in advance; there are days, weeks, and months of preparation after the season's resolution is announced; teams engage in extensive research to pile up quotations from various sources, which are organized into briefs. In contrast, the Opening Government speech of a parliamentary debate is not written up but extemporaneously delivered based on the notes prepared during the 15-20 minutes of preparation time after the motion is announced on the spot. But this does not mean a policy debate team fails to modify the prepared manuscript on the spot. Also, perhaps more importantly, parliamentary debaters do conduct extensive reading and preparation of various case outlines. If they debate the same or similar motions many times, parts of their speeches are likely to be "prepared" and stocked, albeit not memorized.

In terms of computer "assistedness" and "enhancement" of such preparation, there is a line between policy debate and parliamentary debate. In many contemporary policy debate tournaments, the use of computers is allowed and even access to the Internet is often allowed since debaters store their briefs in the cloud and also disclosed in case of open-case and open-evidence debate in the US (Atchison & Miller, 2012; Cram, 2012). Also in the classroom debate, I usually set up a shared folder for the entire class in the LMS so that students can get access to other students' speech manuscripts; in that way, they can more accurately evaluate external evidence

used in the opposition team's speeches (Inoue, 2019).

In the online debate, computer-mediated delivery is the default, i.e., all the speeches are electronically transmitted to the hearer. This is a very important feature of communication and has a potential to eliminate various challenges that human debaters face, which will be discussed in the next section. Their speech performance is equalized by computer assistance when their oral speeches are delivered from video-/audio-output devices mediated by computers.

I have discussed some details of the process of computer-assisted debating in three different modes and compared debate and athletic competitions in terms of fair use of technologies, considering whether they are essential for participation or giving unfair enhancement of performance. Then, in Section 4, I will discuss conditions about which "inclusiveness" of debate participation is in question.

4. Challenges in debate competitions

Participating in formal debating in front of the third party (judges or audience) in itself is a very stressful communication situation. Many people just shy away from participating in debate if public speaking is a number one fear for many people, even worse than death (Dwyer & Davidson, 2012). Although formal debating is a communication situation in which arguers primarily try to convince the third party of their positions, cross-examination and "Point of Information (POI)" in many debate formats allow direct confrontation between competing participants against each other; prospects for such communication situations further discourage many people not particularly "argumentative" (Infante & Rancer, 1996). Those people who are physically or mentally challenged will face further difficulties of participation. Once participating in competition, many debaters face a variety of biases in judging and decisions, including language, cultural/ethnic affiliation. COVID restrictions made it difficult and even impossible for face-to-face participation in debating competition. But even before and after the pandemic, travelling to debate tournaments had and will have constraints. Let me discuss some of them and how debaters may be assisted by computers to alleviate such challenges and restrictions.

4.1. Cultural/linguistic biases

In the international competitions, one of the most salient challenges debaters face is language and its associated cultural or sociolinguistic biases. First of all, if debaters cannot speak the language used in the debate, they cannot participate in it at all. Gender is the most frequently discussed issue in equity in competitive debating (e.g., Schwartz-DuPre, 2006; Johnson-Castle & Tan, 2015; Morooka, 2020). Language, culture, and race are also considered to

create inequality in competition (Suzuki *et al.,* 2010; Suzuki & Sakai, 2010; Stepp, 1997).

4.2. Physical/mental handicaps

Debating had long neglected accommodating physically and mentally handicapped participants in tournaments. It assumed that participants were able speakers/hearers of the language used in debate, who could stand at the podium in front of the audience/judges to deliver a speech and confront each other in Cross-Examination and POIs. Competitive (tournament) debating and other forensics (speech and debate) activities need to work out the balance between inclusion/accommodation and fairness[8].

4.3. Current tournament rules and practices in computer assistance

Let me look at the rules and practices of a few major tournaments in English in terms of the computer use. An American high school league, the NSDA's "NEW GUIDELINES for Use of Internet-Enabled Devices in Debate Events" have rules about the electronic devices and the internet for online tournaments. They do not specifically refer to "handicapped" debaters but they could be assisted under the current rules:

> «These rules apply to Policy Debate, Public Forum Debate, Lincoln-Douglas Debate, and Big Questions Debate. These rules will be used at the National Tournament. These rules are required for any district tournament whose debate events are held online. If a district tournament does not state otherwise, these guidelines will govern their contest. Districts may choose to use the Previous Guidelines for Use of Internet-Enabled Devices in Extemporaneous Speaking provided they notify their district 60 days in advance.
> A. Contestants may use electronic devices (including laptop computers, tablets, and/or cell phones) to access the internet during debate rounds with the following conditions:
> 1. Computers or other electronic devices may not be used to receive information for competitive advantage from non-competitors (coaches, assistant coaches, other non-competing students) inside or outside of the room in which the competition occurs. Information that would be restricted would include but not be limited to coach/non-participating competitor generated arguments, advice on arguments to run, questions to ask during cross examination, and other information not generated by the participating competitors in your round.
> 2. Internet access may be used to retrieve files, exchange evidence and/or arguments, research arguments, and partner to partner communication, and communication between other participants in the round. These electronic device guidelines do not limit communication between debate partners during the debate round». (NSDA, 2022, p. 28)

Since these rules allow online participation using computers, as long as handicapped debaters do not gain "competitive advantage" from others, they would be assisted by computers in speech recognition and production.

The collegiate English-language world championship, the WUDC has this rule of internet/computer use in its "Debating & Judging Manual":

8. Some requests for accommodation may be turned down for fairness. For example, speech and prep time are non-negotiable in the NSDA tournaments in US high schools (Mayes & Zirkel, 2018).

«Preparation Time
After the motion is released, teams have 15 minutes to prepare their speeches. During these 15 minutes, the two speakers in a team must confer solely with each other while preparing. Receiving assistance from anyone else during prep time, such as coaches, other members from their institutions, or judges, is strictly prohibited – teams spotted doing this should be reported, and may be penalised by disqualification from the tournament1. Teams must not, under any circumstances, use the Internet to research the motion or to communicate with anyone that is not the CA team, the Organizing Committee, or their partner. However, they may use their electronic devices as stopwatches, or as cameras to take photographs of the draw, motion and info-slide. They may also refer to electronic (offline) dictionaries. There are no exceptions unless teams receive authorisation in advance from the Adjudication Core due to special circumstances». (WUDC, 2022)

In this way, the WUDC prohibits the use of internet during the preparation time but may allow handicapped debaters for getting assistance with advanced authorization. In an American Parliamentary debating style, the computer and internet use is not explicitly prohibited during the preparation time, and research for external evidence (published information) is allowed in the NPDA "Rules of Debating":

«4. During the debate
A. Any published information (dictionaries, magazines, etc.), which may have been consulted before the debate, cannot be brought into the debating chambers for use during the debate. Except for notes that the debaters themselves have prepared during preparation time and a copy of the NPDA "Rules of Debating and Judging," no published materials, prepared arguments, or resources for the debaters' use in the debate may be brought into the debating chambers.
B. Debaters may refer to any information that is within the realm of knowledge of liberally educated and informed citizens. If they believe some cited information to be too specific, debaters may request that their opponent explain specific information with which they are unfamiliar. In the event further explanation of specific information is requested, the debater should provide details sufficient to allow the debater to understand the connection between the information and the claim. Judges will disallow specific information only in the event that no reasonable person could have access to the information: e.g., information that is from the debater's personal family history». (NPDA, 2022)

In accommodating some physically challenged students in hearing and seeing, in addition to sign-language interpreters, mechanical, i.e., computer, devices have been allowed in some tournaments (Got, 1996; DebateDrills, 2020; isaacdoty, 2019). As computer assistance becomes more efficient and commoner in other domains of communication, computer-assisted debating will probably become "normal" and needs for specific rules to regulate computer use will be imminent. In the next section, I will present a tentative set of rules and discuss some implications.

5. Proposed rules

Most of the tournaments only allow the oral delivery of speeches in the language of the tournament, mostly English, although other

modes of presentation may not be explicitly prohibited. Oral speeches are mediated, i.e., it is through the microphone and the audio speaker in the room. In case of online debate, whether video-based or sound-based, speeches are all go through computer devices. Under both conditions, potential uses of computers will be considered.

5.1. Basic principles: fairness and assistedness categories

Discussing how far computers can and should assist debating requires a few important principles. One is fairness, which is often paramount in competitive debating as a game. Special cases should allow accommodations based on legally recognized handicaps. Another is setting up some categories or criteria against which fairness is operationalized in order to deal with varying degrees of assistance that computers can and should offer while maintaining the game's fairness. In a current tournament, e.g., WUDC, there are three categories: Open, ESL, and EFL based on the language proficiency. In computer-assistedness, I propose, tentatively:

(1) Open, i.e., allowing any use of computers.
(2) Computer-mediated, i.e., allowing computers to mediate communication and information processing. Computers may not evaluate or create arguments.
(3) No computer, i.e., allowing no computers once the debate starts.

It is certainly possible to set up further differentiated categories depending on the tournament.

5.2. Sample rules

Here are some sample rules in computer-assisted debate (tournament), which would equalize various disabilities and biases discussed above:

Rule X. Team Members
Rule X.1. A team consists of two (three or four) members. One of them must be a human. The other(s) may or may not be humans.
Rule X.2. Outfit/Uniforms/Appearance.
Rule X.2a. (On-site members) Team members shall be inside the uniformed "Debater" that bears the same type of appearance as the other "Debaters" of the debate (tournament).
Rule X.2b. (Virtual members) Team members shall appear in avatars stipulated in the debate (tournament).
Rule Y. Delivery of Speeches
Rule Y.1. Speeches and other utterances (those in Cross-Examination, Point of Information, and Point of Order) shall be delivered orally, i.e., using acoustic sounds.
Rule Y.1a. (On-site speech) Oral utterances shall be delivered either directly from team members as human voice sound or indirectly from electric speakers or similar mechanical devices.
Rule Y.1b. (Virtual speech) Oral utterances shall

be delivered from electric speakers or similar mechanical devices.

Rule Y.2. (Translation) Oral utterances shall be "translated" into forms of communication intelligible to the participant. Such forms include but not limited to:
a. Visual texts.
b. Braille.
c. Other languages including a sign language, a machine language, and a human artificial language like Esperanto.

Rule Z. Speech Time.

Rule Z1. Speech length is timed based on the oral delivery, i.e. the duration of the speech sound.

Rule Z2. Speech sound quality, including rate (speed) of speaking, loudness, pitch, and other language variations shall be within the limit of the intelligibility of hearing humans.

Rule Z3. Other forms of communication (texts, sign language, etc.) may be quantified based on the time necessary for humans to process them.

There are some points to discuss further about how these rules should be interpreted.

5.3. Discussion of the rules

Traditionally only paper and pens (pencils etc.) were allowed in debating and then computers without internet access. Even today, many tournaments specifically prohibit the use of computers and access to the internet during the debate round once the debate starts, even though they may be allowed during the preparation (as in NPDA). On the other hand, so-called paperless debating in American policy circuits heavily relies on the computers and the internet, e.g., cloud storages of files open to all the participants (https://paperlessdebate.com/).

Rule X is concerned about who may be allowed to participate in the tournament. Participants of the debate, whether debaters or judges (or audience members) are "real" human beings in the current debate with notable exception of IBM's Project Debater in public debates. I have not heard of any robot debater that participated in a competitive tournament but such eligibility will eventually be discussed just as eligibility was an issue about women and black debaters in the past.

Rules X.2 and Y try to neutralize all visible and audible features to avoid biases in evaluating the quality of speech by the judges and more broadly by the audience of the debate. But this does not help much to solve the problem of those biases since the biases are likely to continue. One hope is that the debate participants will realize that their evaluation of the arguments and debate decisions can be much more bias-free and experiencing such bias-free debating will help decrease the bias itself.

Rule Z is concerned with speed among other things. Time may be measured in relation to information load of the speech. In a traditional tournament debate round, debaters tend to speak faster and faster as the audience (judges) get accustomed to the speed and become able to process the

faster speech. Faster speeches can deliver more arguments and thus more "persuasive" than slower speeches if other factors are equal. If the speech is assisted by computer, e.g., vocalized by speech synthesis, the upper limit of speed becomes the limit of computer processing in both synthesizing and recognizing. It is technically possible that the computer delivers a speech in English at the rate of 1,000 WPM (100 - 400 WPM in human debating) and recognize the speech of such speed, speech time becomes less than half the time necessary for direct human-to-human debate. Alternatively, a "debater" can squeeze in more than double the arguments in the same length of speech time. This is clearly the case of "enhancement" and considered unfair if such computing is allowed only for some debaters.

Time is also related to geographical locations. Computer-assisted debate can be participated from a remote place overcoming the difficulty of physical attendance but the time differences are intact. If you travel to the tournament venue, you will share the same time after your body has adjusted to the time zone. Online participants, on the other hand, are bound to the local time. If you participate in the debate in odd hours in your daily life, it is not healthy and may disturb your roommates or family, if debating from your room.

One possible solution is the use of "cyber avatars" briefly discussed in Section 3.3. If your memory is transferred to such an avatar and debate online (virtual) or in-robot, rather than in-person, your avatar may debate while you are sleeping. In order to integrate the avatar's experiences and memory back into you, yourself, avatar's memory must be fed back to your memory and it or the cognitive schema must be reconfigured, which may or may not take time and harm you. Even if it is technologically feasible and does not cause you any health or psychological harms in theory, do we really want it? Such avatars may be necessary assistance to handicapped participants but if you are able to participate in person, do you consider the augmented reality as an improved quality of your life freeing from various constraints? I am quite skeptical about this prospect.

Of course, this kind of technological developments are not unprecedented as a case of writing that had changed our cognition (Ong, 1982). Some of my concerns may be unwarranted and our cognition may not be harmed by technologies (Cecutti *et al.,* 2021).

6. Conclusion

This article briefly reviewed past and current state of affairs in the use of computers and related technologies in academic debate and then proposed some rules to introduce in computer-assisted debating. Computer-assisted debating is already part of the many debating scenes and will be more widely used along with the development of computer-mediated communication in our society. Unexpected situations like COVID-induced restrictions in our physical movements suddenly accelerate changes. This is a timely moment to sort out some of the issues.

I will conclude this article with a practical

proposal that is to set up a set of principles and rules in computer-assisted debate and one philosophical question. At the practical level, debate, especially tournament competition, should introduce a system of "computer-assistedness" categories, just like para sport classification, which may obsolete Open/ESL/EFL categories in the WUDC (World Universities Debating Championships). At the philosophical level, I would argue that we must not overcome the time constraint in virtual meetings including debate rounds. The time constraint may be technologically overcome by cybernetic avatars or time-machine mechanism but either will jeopardize humans and/or the physical world, thus will be ethically unjustifiable, although this kind of technological development may not be new to us as "writing" completely changed our communication and even cognition. My philosophical objection may be more of personal intuition and emotion. In any case, we are real-time experiencing and witnessing significant changes in debating, or communication in general.

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