Ellulian Provocations for Educational Technology and Higher Education

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Abstract

Jacques Ellul, a 20th century French sociologist, is best known for his writing on *technique*, understood as both individual means to ends and an all-encompassing system that prioritizes efficient solutions to problems. While Ellul's terminology is not necessarily familiar in contemporary educational technology research, it represents traditional understandings of individual tools as a subset of instructional systems and captures the field's emphasis on finding more efficient and efficacious means of teaching and learning. However, Ellul's writing on technique is largely skeptical, creating an opportunity for educational technology researchers to turn a more critical eye towards our emphasis on solutions to problems. This essay argues that while an increased emphasis *problems* over *things* is welcome, Ellul's writing invites more careful consideration of what it means to solve problems. In particular, I draw on Ellul to ask three provocative questions: which problems should we solve, who should solve those problems, and is solving problems always good?

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In this article, I will outline some provocations for educational technology researchers in higher education that are drawn from Jacques Ellul's writing on *technique*—most notably his 1954 *La technique, ou l'enjeu du siècle* and its 1964 English translation *The Technological Society*. Ellul's use of the word *technique* may be unintuitive for exclusively Anglophone readers. As indicated by the original and translated titles of his book, the term is frequently understood as relating to technology. However, the exact connotations of *technique* (and a subtle but ambiguous distinction *from* technology) are more common in Continental European thinking and do not always survive translation into English (Salomon, 1984). In short, technique is more than technological tools—Ellul describes it as any "operation carried out in accordance with a certain method in order to attain a particular end" (p. 19; see also Salomon, 1984). Even if this specific vocabulary is unfamiliar, the ideas behind it should not be unfamiliar in educational technology research. For example, Hoadley (2004) describes technology as "an important aspect"—but not the totality—of "instructional systems" (p. 8) directed toward certain outcomes. Likewise, Molenda (2008) acknowledges as examples of educational technology "special work processes or carefully designed instructional templates that are applicable beyond a single case" (p. 5).

However, Ellul typically refers to technique in even broader terms, as an all-encompassing phenomenon that transcends not just individual tools but also individual techniques. In an explanation included in the 1964 English translation of Ellul's book—but not the 1954 French original—he explains that:

> "The term *technique*, as I use it, does not mean machines, technology, or this or that procedure for attaining an end. In our technological society, *technique* is the *totality of methods rationally arrived at and having absolute efficiency (for a*

> *given stage of development)* in *every* field of human activity." (Ellul, 1964, p. xxv; emphasis in original).

Once again, this resembles ideas—if not terminology—in our field. For example, Molenda associates educational technology with "find[ing] ways of teaching in ways that are more efficient" (p. 4); likewise, Kolodner (1991) describes the learning sciences as responding to a need for "concrete guidelines about what kinds of educational environments are effective in what kinds of situations" (p. 2). We might well describe our field—whatever name we give it—as itself dedicated to finding such a collection of efficient and efficacious methods for the human activities of teaching and learning.

Higher education is particularly interested in this efficiency and efficacy. For example, many educational technology researchers—and practitioners—work with (or support) learning and institutional analytics in the hope of predicting student outcomes and providing appropriate support (e.g., Viberg et al., 2018; Whitman, 2020; note, however, that both papers problematize assumptions about these applications of technique). Furthermore, higher education has long expressed concern for efficient and efficacious use of resources (e.g., Lindsay, 1982), and scientific and governmental contexts may also have priorities that can be understood in terms of Ellul's technique (Berliner, 2002; Phillips, 2014). Thus, educational technology researchers employed in higher education may be doubly concerned with technique, even when their own research is primarily focused on focused on primary, secondary, or informal contexts.

However, if Ellul writes about technique, it is with considerable skepticism and concern. If we find that his understanding of technique is readily applicable to educational technology research and higher education, we must then ask ourselves what Ellul would critique about our field and our professional context. This essay is a modest attempt to start such a conversation. In

keeping with the framing of this special issue, I situate Ellul's critiques in the established distinction between *things* and *problems* (see Reeves & Lin, 2020; Reeves & Reeves, 2015). However, while moving from *things* to *problems* is a welcome development in educational technology research, I will argue that Ellulian thought asks us to go deeper in our considerations. In particular, I will use Ellul's writings to ask which problems are worth solving, who should solve those problems, and whether solving problems is always a good thing. In doing so, I will illustrate how Ellul challenges not only the *things* (i.e., individual techniques or technologies) that we value but also our overall emphasis on efficient solutions to *problems* (i.e., the broader phenomenon of technique).

Which Problems Should We Solve?

During my doctoral studies, I took a history of educational psychology course from a professor who was a dedicated Quaker pacifist—in five years of classroom and hallway encounters, I don't believe I ever saw him without a peace symbol pin as part of his outfit. At one point during the semester, he explicitly addressed that commitment as part of a class discussion. Acknowledging that the wartime training of soldiers has made important contributions to fields such as educational psychology and instructional design (e.g., Walberg & Haertel, 1992; Hall, 2003), he confessed that he felt a great deal of personal discomfort that so much of what we know about effective teaching was developed in the service of a cause that he was morally opposed to.

Although my professor—like, as it happens, Ellul (1998)—was deeply opposed to violence, I expect that there is a wide range of defensible, sincerely held beliefs about conflict and peace among educational technology researchers in higher education. My intention in sharing this story is not to promote any one view but rather to provide just one example of how

educational researchers might reasonably disagree about what counts as "real problems in education" (Reeves & Reeves, 2015, p. 27). Of course, this disagreement is less of an obstacle than an unwillingness to discuss these disagreements in the first place. As Green (2021) argues of data scientists, educational technology researchers are often content with "praise and publications based on broad claims about solving social challenges, while avoiding substantive engagement with social and political impacts" (p. 255). Concentrating more on *problems* is a welcome development in educational technology research, but it will be incomplete so long as we do not critically examine which problems we focus on.

Higher education is concerned with a number of problems that educational technology can respond to. Consider, for example, the continued relevance of problems listed by Kolodner (1991) in her introductory editorial for the Journal of the Learning Sciences, such as insufficient interest in STEM fields and economically unproductive graduates. Because of shared interests in terms of content, educational technology researchers have often been particularly involved in supporting STEM education. However, because educational technology is fundamentally pedagogical in nature, our field will ultimately be useful in whatever disciplines that universities prioritize as they increasingly arrange themselves around producing career-ready graduates. Yet, Ellul expresses concern that "education no longer has a humanist end or any value in itself" (p. 348) but is arranged in a utilitarian fashion around a society's stated needs, which are themselves driven by technical concerns about efficient solutions to perceived problems. He is particularly critical of the kind of vocational guidance we might be asked to support, describing it as "simply a means for subordinating [humans] to the requirements of economic technique" (p. 362). Do more effective STEM (or other economically productive) programs in higher education solve real, worthy problems, or are they merely "essential to the needs of the capitalist economy" (p.

359)? (It should be noted that Ellul, a committed anarchist, was equally critical of Soviet education for similar reasons).

Of course, educational technology researchers can prioritize both in their efforts to improve higher education—but this does not entirely resolve the issue. I believe the "under-representation of women and minorities in STEM fields" evoked by Reeves and Lin (2020, p. 1998; see also Rosenberg et al., 2021) to be a genuine problem and agree that better representation within technical fields increases the chance that they will be directed toward worthy causes (D'Ignazio & Klein, 2020). Yet, even if an effective solution were found, deeper problems would remain. Ellul (1964) describes a "tendency... to eliminate from the legitimate concerns of the state all sciences that have no immediate practical application: history, philosophy, grammar, and so on." (1964, p. 313). Extending this kind of critique, Noddings (2013) notes that "today's curriculum... was designed by men for the public life of men" (p. 67). While efforts to improve equality are laudable, they have too often taken the form of merely encouraging women to enter traditionally male fields rather than lifting up undervalued "work that women have done for centuries" (p. 68). Because our work is applicable to all disciplines—and because of our field's natural affinity for other technical disciplines—we risk excusing ourselves from important conversations from what is worth teaching and learning in the university and elsewhere. Yet, effective educational technology solutions are of little value if they are directed toward the wrong problems; while identifying the right problems is a difficult—and potentially divisive—task, educational technology researchers must be willing to try.

These efforts will, naturally, be in spite of important pressures on educational technology researchers to prioritize certain problems. Ellul (1964) describes how governments assign "precise task[s] to scientific research, issuing directives to the effect that it must find solutions

for certain pressing problems" (p. 313). As governments—and scientific organizations—outline specific priorities for research, the technical nature of higher education (i.e., its focus on certain understandings of accomplishment, efficiency, and efficacy) may also have consequences for educational technology researchers who are employed by universities but do not research them. For example, no matter how methodologically or theoretically interesting, research on topics such as how social media might support learning about social activism (Gleason, 2013) or feminism (Gleason, 2018) has always received less public funding than research on, say, computational thinking. The contemporary rise of authoritarian and anti-intellectual movements across the Global North raises not only the risk that researchers persisting in studying those topics will be singled out for criticism but also the possibility that previously encouraged and funded fields of educational technology research will be suddenly and dramatically ruled out of bounds. This provides an important invitation for educational technology researchers to reject efficient solutions as self-evidently good and problematize deference to the governments and other bodies who have traditionally defined problems for us.

Who Should Solve Those Problems?

Franco-Ontarian author Daniel Poliquin's (2012) *L'historien de rien* (*The Historian of Nothing*) starts with the story of an unnamed girl in an early 20th century rural Canadian village who begins an educational career shortly after finishing primary school. The local teacher is a nun who would like her to continue her studies at a nearby convent; when her parents refuse, the nun takes her on as a classroom aide. At seventeen, she earns a basic teaching certification based on rote memorization and, soon after, replaces the now-ill nun as the village's only schoolteacher. Although she is barely an adult, her position is so respected in the community that even her parents refer to her as "Mademoiselle" (rather than by her name) when speaking to neighbors.

After a disastrous flu epidemic and a series of naïve misadventures cause a brief pause in her career, she once again becomes the sole teacher of the village, now populated by a group of Ukrainian immigrants, who universally love and support her despite her limited experience and ability.

This character is not a model of ideal teaching and learning, but I have often thought of her since reading the book a few years ago. Even the novel is not uncritical about this teacher's obvious lack of qualifications: A recurring observation of the book's first chapter is just how much the provincial ministry of education is willing to overlook out of gratitude that *any* kind of teaching and learning is happening in the remote village. Yet, contemporary efforts to identify and apply more efficacious models seem to me to risk stamping out the human aspects of education that I find moving in the novel. For example, Bradbury (2019) describes how changes to early childhood education in England risk reducing teachers to producers of data who no longer have time to build relationships with the young children they teach (for historical precedents, see Watters, 2021). Taking things further, one charter school in Arizona (USA) has proposed using artificial intelligence for content delivery, using human instructors to determine whether students are "learning effectively and efficiently through the system" (Schultz, 2025, para. 17).

While higher education faculty are rarely subject to this level of scrutiny and oversight, educational technologies could go some way toward our field's imposing solutions on our colleagues. For one, the continued prominence of generative AI will continue to raise questions about whether professors could be replaced—or should be supplemented—with AI (e.g., Chan & Tsi, 2024). What's more, Viberg and colleagues (2018) note that learning analytics are also held to improve *teaching* processes, and Eaton (2021) entertains a thought experiment where

university students can run analytics on their instructors. Educational technology researchers are perhaps especially aware that too many of our colleagues are content experts but pedagogically limited to the "trial-and-error of everyday living" (Molenda, 2008, p. 4) that our field seeks to overcome. Indeed, even Ellul would not necessarily reject professors' finding more efficient and efficacious ways to support learning. Early in his book, he speaks uncritically of the ways in which "natural and spontaneous effort is replaced by a complex of acts designed to improve" human action (Ellul, 1964, p. 20). However, he notes that this "technical operation still occurs on the same level as that of the worker who does the work" (p. 20)—that is, the person carrying out the work retains autonomy and agency as they seek for improvement rather than being made a cog in an autonomous technical machine.

Ellul's concern seemingly emerges when it is *specialists* or *technicians* who dictate solutions to others in the name of efficiency or efficacy, potentially resulting in "monopoly of technical means by a technical elite" (p. 275). Despite developments in technologies like generative AI and learning analytics, higher education faculty are typically afforded a great deal of independence; it seems unlikely that educational technology researchers would achieve (or even desire) the kind of monopoly that would allow us to influence from above how other faculty run their classes. And yet, we have often done so in other educational contexts. Indeed, there would be no reason for the identification of independent and dependent variables or statistically significant relationships if our purpose was not to recommend to others that they pursue solutions that we have developed. Far too often, primary and secondary teachers have been reduced to "the role of a recording device" in that they "note the effects of techniques upon one another, and register the results" (Ellul, 1964, p. 93). These actions and outcomes may well be in the service of "the issues of most interest to practitioners[:] ... their real-world problems" (Reeves, 2020, p.

814); yet, there is an uncomfortable logic within many—if not most—researcher-practitioner partnerships that we as researchers are better qualified (or otherwise better suited) to solve practitioners' problems than they are.

Even if educational technology researchers have not exercised technical elitism over our colleagues, higher education faculty and institutions *have* begun exercising it over the students that we serve. Learning and institutional analytics are often employed in the service of prediction—identifying, for example, which students are likely to fail a course or drop out of the university (Corinn et al., 2019; Viberg et al., 2018; Whitman, 2020). Although these predictions are meant to enable good faith interventions that support student success, Ellul (1964) warns against the technician who believes their "good intentions are as clear as their excellent results are undeniable" (p. 390). First, even the best intentions merit critical evaluation; as I have previously argued (Greenhalgh, 2023), institutions of higher education may have economic or other incentives to support student success. It is unfortunately not out of the question that educational technology applications like learning analytics could be leveraged to solve a university's tuition or reputation problem rather than a truly social problem. That is, we may find ourselves recommending solutions to *our* problems, not theirs. Second—and not entirely separately—Ellul's distrust of these technicians stems from their basing their intentions on an abstract humanity rather than concrete individuals. Likewise, Ellul earlier critiques an abstraction of people that omits "certain human characteristics" (p. 218) in order to reduce them to roles and variables of interest. Educational technology research similarly risks reducing complex human beings to a set of data points that accounts for the specific phenomena we are interested in but cannot conceive of solutions outside of those bounds.

If educational technology researchers are dedicated to identifying "the best ways to create systems that yield learning" (Hoadley, 2004, p. 8) or creating "educational environments more conducive to learning" (Kolodner, 1991, p. 2), there is a risk of treating humans as "the source of error" (Ellul, 1964, p. 136). Whether these humans are fellow faculty, primary and secondary teachers, or students of any kind, it is critical that educational technology researchers consider Ellul's fear of a "progressive elimination of [humans] from the circuit" (p. 163) of efficient systems. The entire project of educational research has often been distrustful of teachers (Nichols, 2021; Watters, 2021), and it is perhaps surprising that the same distrust does not exist of higher education faculty, many of whom receive less pedagogical training than their primary and secondary counterparts. Furthermore, a learner is defined, at least in part, by a certain lack of knowledge. Yet, to exclude any of these populations from deciding on solutions to the problems that they themselves face is dangerous. No matter how sincere our desire to help others, we must nonetheless ask ourselves if we wish to dictate their behavior from a place of technical expertise—or if we are willing to offer our research as simply a potential resource that they are free to reject based on their own expertise and context.

Is Solving Problems Always Good?

As I was writing this manuscript, I noted with interest an article on the University of Kentucky's news page. The main focus of the story was efforts within the university's College of Engineering to improve the lifespan of the iPads that students receive upon joining the university. What I found more interesting, though, were some details included early in the article:

> "Since 2019, the iPad Initiative, in partnership with Apple, has continued to level the technological playing field for UK students — enhancing in-class and online

> learning by building skillsets that contribute to future success." (Piercy, 2025, para. 2)

It makes sense that such a large-scale distribution of iPads would be carried out in partnership with Apple rather than simply ordering tablets in bulk. However, Apple's direct involvement in furnishing educational technology for this university's students might also raise further questions for educational technology researchers.

To take one example, van Dijck and colleagues (2018) describe Apple's forays into educational technology as "drawing children and young adults into its iOS-based universe" as (van Dijck et al., 2018). Even if a university and its students genuinely benefit from a partnership with Apple, it is clearly not a selfless move on the company's part. The feature set of Apple devices encourages users to buy other hardware from the company (e.g., Beres, 2021), and iPads (even more than some other Apple devices) lock users into an ecosystem where the company reigns supreme. As Giblin and Doctorow (2022) argue, because software can only be installed on iPads through Apple's App Store, any educational institution that adopts this hardware essentially grants the company the right to pull the rug out from under students and instructors at any point. Of course, Apple is not alone here—a primary school's purchase of inexpensive Chromebooks benefits Google in other ways (e.g., Kerssens & van Dijck, 2021). Furthermore, recent reporting argues that companies' "race to embed AI tools in academia is a competition to shape how the next generation works with AI — and crucially, to become their default AI tool" (Robison, 2025, para. 8; consider also Whitwam, 2025). Even assuming that providing iPads (or Chromebooks, or LLM access) *actually* solves *actual* problems—an assumption that cannot be made uncritically—doing so also empowers already powerful companies who wish to lock students in as lifelong customers.

While I acknowledge Ellul's (1964) repeated criticism of "the pressure of [private] money" (p. 10) to solve certain problems, I use these educational partnerships primarily as an example of a broader concern: that "the solution of one problem by technological means immediately raises a multitude of others" (Ellul, 1980, p. 243). This "multitude" of problems is not limited to the further enriching of a small number of dominant technology companies. For example, a UNESCO report examining the consequences of adopting educational technology solutions early in the COVID-19 pandemic also raised concerns about consequences such as environmental costs, privatization of education, social inequities, and surveillance (West, 2023). I do not reference these critiques to endorse the kind of blanket (and often bad faith) criticism of online learning that too often emerged during this time period. Rather, I intend to highlight that even if emergency remote teaching (see Hodges et al., 2020) was the best solution to a suddenly emerging problem—especially in higher education, which is not the focus of the report—the new problems that emerged from that solution are also worthy of our critical attention. This is especially important given students'—and, likely, institutions'—lack of understanding related to potential problems (e.g., Dowell & Greenhalgh, 2025; Jones et al., 2020).

In this context, merely solving problems within a university (or other educational setting) is insufficient, and solving a single problem may even be undesirable if it creates other, more-pressing problems. To account for this, educational technology research would have to considerably broaden its scope. Ellul (1964) argues that "it is impossible to analyze this or that element" by removing it from its place within the broader technical system and criticizes those who would "deny the unity of the technical complex so as to be able to fasten one's hopes on one or another of its branches" (p. 95). Rather, Ellul seems to suggest, educational technology researchers would do well to consider the broad effects of a particular technology or intervention,

including those well beyond the specific problem of interest. Indeed, in later writing, Ellul (1980) offers as a heuristic "*non-intervention each time there is uncertainty about the global and long-term effects of whatever actions are to be undertaken*" (p. 246; emphasis in original). This is a high standard, given that some uncertainty is surely inevitable, but Ellul's ethic of *non-power*, of "being capable of doing something and deciding against it" (p. 246), would surely prevent some problematic educational technology research and application from ever seeing the light.

In higher education, of course, it is more often institutional authorities or individual instructors—and not researchers from our field—who make decisions about the adoption and implementation of educational technologies. Perhaps, then, our response should be to put more collective effort into critically anticipating potential problems created by the phenomena that we study. This potentially complicates the call of Reeves and Reeves (2015; see also Reeves, 2020) to make "evidence of impact" a key indicator of "worthiness for promotion and tenure" (p. 29). While the specific suggestions listed in these articles do not expressly rule out the kind of critical scholarship on educational technology that could respond to Ellul's concerns, it is unclear whether researchers in our field would judge criticism to be as productive in solving problems as efforts toward solutions. Indeed, Ellul (1985) himself notes that criticism is not always welcome, that it "seems completely sterile... because it impedes action" (p. 34). Yet, this is but one kind of educational technology research that has the potential to add much to our literature—and respond to Ellul's concerns—without directly solving any problems.

Conclusion

"Provocations" is the key word in the title for this paper, and I chose that word carefully. I confess that I am at a relatively early stage of my study of Ellul and that I find some of his claims overbroad. Most importantly, I do not always know how to resolve the tension between these

provocations and the compelling practical constraints and immediate needs that also shape our field. None of these caveats, however, should be understood as my rejecting Ellul's writing or undermining any of my applications of it here. Given that the core of his writing dates to the mid-twentieth century, I am impressed by how well his perspective captures some of the concerns that I have developed during my (admittedly limited) time as an educational technology researcher, a faculty member in an information communication technology program, and an observer of contemporary technological development.

In some ways, Ellul has given me a framework for repeating an argument that I have made more clumsily and narrowly in the past (see Greenhalgh, 2023): that much of how we judge our work in educational technology is based on assumptions that often go unevaluated. Ellul's (1964) skepticism of "the search for greater efficiency" (p. 20) might seem jarring in a field where "more efficient and effective" (Molenda, 2008, p. 13) has so often captured what we are striving for. Yet, Ellul (1964) bemoans a "reality of modern life" where "the means, it would seem, are more important than the ends" (p. 19). Prioritizing *problems* over *things* in our field is important in that it asks us to consider educational technologies *as* means to ends rather than as inherently worthy of our attention. Yet, Ellul demonstrates that we must also critically consider which ends we are working toward—and when working toward ends may instead be undesirable. I therefore conclude with three possibilities of how we might better do so in educational technology research, echoing (in reverse order) the provocations that I have shared up to this point.

First, let us explore with our research how educational technology creates problems instead of just solving them. We have now been aware for decades (e.g., Cuban, 2003) that educational institutions adopt technologies even when they do not seem to have any substantive

impact on learning or teaching; indeed, this seems to be the very motivation behind calls to focus on *problems* instead of *things*. Yet, a failure to live up to pedagogical potential is hardly the biggest danger, given that today's educational technologies can also subject students to invasions of privacy (Jones et al., 2020) and even challenge the values of public education (van Dijck et al., 2018). In doing so, we can also expand our views of what counts as educational technology, even if it means challenging our assumptions that technology is necessarily bound up in progress (see Watters, 2018). More critical research in educational technology may not directly solve problems, but in an age where technology adoption is progressing just fine without us, it may be more important to prevent them.

Second, let us be more deferential in our research. This may mean that rather than exercising our expertise on behalf of others, we share what we know with them. Continuing from the previous paragraph, students are themselves largely unaware of the potential problems caused by educational technologies (Jones et al., 2020); furthermore, the Electronic Frontier Foundation, a digital rights organization, has argued that higher education institutions also misunderstand the educational technologies they use, to the detriment of students (Budington, 2021). Advocating on behalf of students would be a productive pursuit in our field, but it may be even more productive to empower students to evaluate the state of things and engage in their own advocacy. To the extent that we wish to solve other pedagogical problems, there exist methodological approaches to educational research that allow students (or other partners) to play substantial—even leading—roles in everything from defining goals to producing output (see, e.g., DiGiacomo et al., 2024). Sharing our expertise and avoiding technical elitism will help us minimize the potential human cost of efficient solutions to problems.

Finally, let us be broad but deliberate in what we study. While focusing on *problems* is important, careful attention to *things* has helped educational technology researchers challenge common assumptions about what learning is and where it takes place (e.g., Gee, 2003; Greenhow & Lewin, 2016). Indeed, as we defer to learners (and other populations) in defining, solving, and reporting on problems, we may find ourselves valorizing problems and solutions that have not traditionally been emphasized by our field, institutions of higher education, or public agencies and authorities. This does not necessarily mean that we should ignore the priorities established by institutions and governments, but the rise of authoritarianism in some parts of the world should make educational technology researchers in all parts of the world more careful and critical when responding to those priorities. Conversely, however, this does not mean that any learner-defined problem is of inherent value; informal learning may itself be focused on undesirable outcomes (Krutka & Greenhalgh, in press). Perhaps most important here is that educational technology researchers surface potential debates about *ends* rather than simply define our field in terms of efficient *means*.

This paper contains just three provocations—and three possible directions—inspired by the writing of Jacques Ellul. I am confident that his writing on *technique* has more to say about the educational technology research we need—not least since I have drawn from a small part of his prolific writing on the subject. As we continue to consider research in our field, I suggest that Ellul is a voice worthy of further consideration.

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