

## The Narrative Engineer

Ian Gravagne

Electrical & Computer Engineering Dept.  
Baylor University

### Extended Abstract

In recent years we have all become more aware of the central role that algorithms can play in producing unjust and unfair outcomes for certain individuals and people groups. Although the large and highly visible players in the information technology industry (such as Facebook) have borne the brunt of the criticism, scrutiny has also been leveled at the field of computer science generally. Will engineers and their products and efforts be far behind? The accompanying talk to this abstract will examine a few of the socially complex effects wrought by the “law of unintended consequences” in algorithm design; discuss nascent efforts to counteract these effects in computer science curricula; and attempt to generalize these problems (and possible mitigating actions) to engineering education.

In a recent editorial for Scientific American, Mozilla co-founder and chairwoman Mitchell Baker wrote [1], “Yesterday’s STEM curriculum produced an environment where tech platforms and products were developed in isolation from the broader effects they had on society.” The sub-disciplines of engineering have historically prided themselves on their critical role in bringing technology to bear on the needs and problems of human beings. Baker’s assertion about “isolation” may be somewhat overstated, but her essential point bears consideration. In the face of “algorithms that radicalize youth, platforms that amplify misinformation, facial recognition software that perpetuates racial bias, and systems that exacerbate inequality in the courts and hiring practices [2],” it is difficult to avoid the sense that the modern STEM professions (or at least those engaged in algorithm design) have underemphasized their commitment to build technology first and foremost for human flourishing.

Yet, this need for socially responsible tech professionals raises complex and subtle questions. Is it entirely a technology designer’s fault if prevailing business practices drive design in a particular direction? (After all, no one has a job if the product isn’t profitable.) How can a concept like human flourishing be usefully defined or assessed – especially when modern technology design often involves dozens or hundreds of people, none of whom know or see the entire result? If unintended consequences are, by extension, unforeseen, how can one *intentionally* design to mitigate or eliminate them? Who is responsible for how a technology is ultimately used, the designer or the user? Although thought (and action) in relation to these questions is in its nascent stages, I add one suggestion that can perhaps serve to frame the discussion.

In the book *Narrative Economics: How Stories Go Viral and Drive Major Economic Events* [3], author and economist Robert Shiller argues that narrative – and in particular, stories that capture the details of economic realities on individual lives – is the best way to uncover the blind spots that statistical and predictive analysis can miss. This is because narrative influences belief, and belief when shared widely among many people influences economies, technologies, policies, etc. (Ironically, at Amazon – one of the tech companies widely panned for employing “offending” algorithms in its employment practices [4] – founder Jeff Bezos requires his executives to communicate via long narrative memos, not PowerPoint bullets [5].)

Narrative has been the predominant mode for conveying the human condition throughout history. Perhaps it is time for engineering curricula to compliment ethics and communication training with some exposure to narrative and story-telling, so that graduates will know how to imagine, look for, and communicate about the impact of rapid technology deployment on individual lives. This is not an entirely new concept; humanitarian engineering and “appropriate technology” initiatives attempt to comprehend and address needs and injustices for the world’s poorer populations through carefully targeted technological solutions – sometimes one person or village at a time – but even here unintended consequences have loomed large [6]. Nevertheless, if aspiring engineers are to think creatively about how new technology might suppress justice and human welfare, they will need a *lingua franca* – a narration of how technology helps and hinders individuals to live meaningful and purposeful lives.

## References

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IAN A. GRAVAGNE

Dr. Ian Gravagne serves as Associate Professor and Graduate Program Director for the Department of Electrical & Computer Engineering at Baylor University. His research interests include dynamic equations on time scales, and power grid stabilization via synchrophasor-controlled renewable resources. He and his family lived on campus for five years as faculty-in-residence at Baylor, and he recently took a one-year sabbatical to work for Sandia National Laboratories.