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ORIGINAL PAPER

The threat of comprehensive overstimulation in modern societies

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Abstract Members of modern, digital societies experience a tremendous number and diversity of stimuli from sources such as computers, televisions, other electronic media, and various forms of advertising. In this paper, I argue that the presence of a wide range of stimulating items in modern societies poses a special risk to the welfare of members of modern societies. By considering the set of modern stimuli in a more comprehensive way than normative theorists have done so far—as part of a complex system with which members of modern societies cannot reasonably avoid interacting—we can see why the perceptual and informational spaces in which modern life occurs can be sources of disvalue for members of modern societies. This seems true even though the technological innovations that produce these stimuli add great value to the lives of members of modern societies.

Keywords Overstimulation · Information overload · Attention economy · Social welfare · Information age · News media · Internet

Members of modern, digital societies navigate through a maze of advertisements, bright lights, shiny colors, and other stimuli on a daily basis. We are consistently exposed to stimuli from computers, televisions, phones, other electronic media, advertising, and so on.[1] In this paper, I argue that the presence of a wide range of stimulating items in modern societies poses a special kind of threat to the welfare of members of those societies.

Many scholars have offered rich treatments of how particular stimulating items (e.g., computers) affect human welfare.[2] But I will argue that attempts to measure the welfare of members of modern societies should also consider the *cumulative* effect of individual sources of stimulation. Suppose you use ten highly stimulating technologies. The total benefit to you from using any given item might exceed the cost you incur from the item's being overstimulating. Yet, the *set* of items itself could be so stimulating that, notwithstanding how the items benefit you in ways unrelated to stimulation, using all of the set's items ends up lowering your overall utility. If the set itself is profoundly overstimulating, its net cost for you may outweigh its net benefit. My point, however, is not to argue for

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[1] As St. Claire (2011, p. 49) observes, we are "encompassed in a cocoon of information in the form of image and sound" due to the "stimulus glut" in modern society. My argument defends a new rationale for why this "glut" is disvaluable in certain respects.

[2] There is an extensive literature on the possibly detrimental effects of the stimulating modern life on members of modern societies. Wiener (1954) sparked the field of information ethics decades ago with a provocative investigation of how information technology might alter key human values such as happiness and freedom. More recently, Dreyfus (2001) has taken pains to caution against blithely assuming that internet users can find meaning in internet sociality. Elgesem (1996), Nissenbaum (2004), and Tavani (2007) have made key contributions to a sophisticated debate over how best to conceptualize and assess the value of privacy in an era in which computers and information loom exceedingly large (see Vallor 2015 for an excellent overview relied upon here)). Further, recent work on the health effects of using electronic devices indicates that "excessive screen-time appears to impair brain structure and function" (Dunckley 2014); and Bauerlein (2008) has raised significant doubts about the value of highly stimulating screen time in particular and the digital age in general. Finally, in *Alone Together*, Turkle (2011) addresses more generally the impacts and drawbacks of digital engagement in our lives and how we might rethink and reconstitute our relationships with digital technology moving forward.

that conclusion. In modern life, I doubt we would be better off by eliminating our use of stimulating items altogether; and I suspect we could reduce our level of stimulation without significantly diminishing the benefits we enjoy from having stimulating items. In this paper, I will show why *living an overstimulating lifestyle* is itself costly (even if the net benefit of modern living clearly outweighs the net cost), and why theorists should find ways to mitigate the costs of not only excessive stimulation from individual items but also living one's life within a hyperstimulating environment. My discussion will focus on the psychological costs for the individual living the stimulating modern lifestyle, even if individuals derive significant economic and other benefits from their use of stimulating items. An important implication of my account is that judgments about the all-things-considered value of the economic and technological growth we have seen in recent decades should account for how the *new stimulus environment* ushered in by this growth affects the welfare of those now living within it.

I begin by discussing the case of the Saver. This is someone who benefits from each item he saves but incurs a cost associated with accumulating a *set* of items. Next, I argue that modern societies incur a cost in similar fashion. Members of modern societies accumulate many stimulating items which we may suppose *arguendo* are not individually overly stimulating. But the members become overstimulated from the set of items, and this is a significant cost in its own right. The paper concludes by discussing two main classes of stimulating items and some practical ways to mitigate the *comprehensive overstimulation* that has become characteristic of the societies in which we live.[3] But let me again forestall misinterpretation: I will not be claiming that the cost that a member of a modern society incurs from being overstimulated by her society's stimulating items outweighs the overall benefit she derives from living in a society that includes those items (e.g., electronic devices). The point is not to denigrate or dismiss valuable innovations or systems of innovation. It is to articulate an overlooked cost associated with them.

The case of the Saver

The *Saver* is a person who, when confronted with the choice of whether to save or discard a given item in his home, typically opts to keep rather than discard it. We all know—some of us are—such people. The Saver typically chooses what to save or not save *case-by-case*, asking himself questions such as, "Would I (or we) benefit more from keeping this item than discarding it?" Or, a question far easier to answer in the affirmative, "Would I *possibly* benefit from keeping this item?" Accordingly, the Saver typically makes a "thumbs up" decision concerning a single item; his controlling thought concerns the value of a particular item given the purposes it serves.[4]

Although the Saver usually has a background list of items in mind when considering the value of a single item, he rarely thinks about the item's value comprehensively. He almost never considers such matters as how keeping the item might contribute to a *pattern* of developing more and more clutter in his living space. The Saver often thinks, "Since I can always discard the item later, why not keep it around now?" Such a thought is motivated by the twin idea that some saved items may well prove beneficial to him later on (e.g., a saved old t-shirt might be usefully repurposed as a rag) and saving an item is not costly in itself. *The Saver's decision procedure typically looks like this*:

(1) Ask whether he would likely be better off over time having saved the item.
(2) Take "better off" to be relative to his relationship to the individual item alone and not relative to, say, its relation to a set of items that contribute to disvaluable house clutter.
(3) Save the item if the expected value is positive.

Articulating the problem with such a decision procedure is absolutely critical to our upcoming discussion of the disvalue of modern stimuli. The Saver's decision-making process, though intuitive, is not *comprehensive* enough to be rational. By not considering the item to be saved or discarded both in the context of other valued items in his life and as regards the disvalue he will experience from (e.g.) having irritating clutter in his house, the Saver fails to consider the net effect of the saved items. *The Saver's decision procedure thus commits the fallacy of composition.* It assumes that what seems true of each saved item—that saving it will, at worst, have a neutral effect on his welfare—will be true of the set of items as a whole. But even if (say) no given item will be disvaluable to save, why assume that the *set* of saved items will not be disvaluable to save? For, on the contrary, one can plausibly gain value from having *fewer* items that appear valuable when considered individually in one's house, due to the house's greater aesthetic appeal, ease of navigation, and so forth. The exact details here need not detain us, but we have just

[3] I am interested in discussing our comprehensive system of stimuli, by which I mean two things: for a society, the society's stimuli taken as a whole; for an individual or social sub-group, all the stimuli that affect that particular individual or group.

[4] The Saver will sometimes also think about how an item would fit into her environment in terms of whether it serves a function that is redundant with functions served by her other items.

arrived at an important insight: A decision procedure that requires one to keep every item that is valuable other things being equal can be misguided precisely because other things are not equal. A group of saved items each of which would predictably enhance one's welfare down the road might nonetheless impose a heavy cost *as a set*. The set itself can be welfare diminishing for a person even if no single item, considered *in se*, would have disutility. And even if the set adds value overall, it could still be disvaluable in important respects, with these calling for a remedial response. We may now ask: Are members of modern societies like Savers?

Overstimulation in modern societies: The elephant in the room?

The focal question of the rest of this paper is whether the stimuli in contemporary societies, even if caused by individually valuable items, collectively yield an overstimulating environment which, as such, is disvaluable for members of modern societies. Do we promote, by what we buy and how we live, environments that are *so* stimulating as to impose significant costs on their inhabitants?

Notice straightaway that the Saver—someone who saves excessively due to adopting the previously described decision procedure—and members of modern societies are similar in two worrisome ways. First, both involve an unreliable decision procedure. Decisions about whether to save a given item or have a stimulating item in the public space are frequently made according to whether the expected value of doing so outweighs the expected cost *in terms of the item alone*. Consider an example. A business might put up a neon sign with no concern for whether the business is introducing a source of perceptual stimulation to an already hyper-stimulating visual environment (e.g., one with many other signs) for consumers, employees, or bystanders. This is not a decisive reason from the business's perspective not to put up the sign. But, from the standpoint of societal costs, this example shows how a social system's incentive structure—regarding, for instance, the incentives businesses face—can promote the development of a milieu whose stimulation costs for its inhabitants at some point begin to exceed the corresponding benefits.[5] It is true, of course, that a single neon sign (or small set of signs) that a business uses to advertise a product may be valuable because it conveys useful information to consumers. But picture a set of dozens of such signs in close proximity to one another. While the set may lead to a more information-rich state (which is, by stipulation, typically a good thing), such a state would likely be so distracting, attention-grabbing, and aesthetically displeasing as to lower the welfare of the neighborhood's denizens and visitors. Thus we cannot assume that a comprehensive system of individually valuable stimuli is socially valuable. To do so is to commit the fallacy of composition. And, as for my main concern, even if the net benefit from the group of signs outweighs its net stimulation cost, there is still reason to hope for the mitigation of that cost.

Here is the second worrisome way in which the circumstances of modern societies map onto the case of the Saver. People (e.g., consumers) who are considering the value of stimulating items do not seem to consider enough of the total system of related items. This is not to deny Hayek's striking insight (2014, pp. 293–303) that it is impossible in principle for someone to consider, say, the market system in its entirety, if the system is the result of human action but not of human design.[6] Hayek thought of the market as a process shaped by the actions of individuals that creates and relies upon information so great and diverse that no one can fully understand it. Now, I am not saying that theorists and other members of modern societies must be able to understand the whole system of stimuli in modern life, which would be too epistemically demanding; and I allow that some people sometimes consider a subset of a system of stimuli when reflecting upon the value of a single stimulating item. The point is that a fully rational assessment of the value of a given stimulating item must take into consideration *more* of the system than people often do. What should such an evaluation consider, stimuli-wise? It should consider, I suggest, somewhere between a singleton in set X and X itself, but certainly far more than the singleton itself. Just how many stimuli a given analysis should take into account will vary by circumstances. But to get some sense of the potential value or disvalue of a whole system of stimuli, one must try to consider, if not all, then at least a good number of the stimuli in X. Reliably judging whether one is overstimulated requires thinking about a broad range of stimuli and how they jointly contribute to one's overall stimulation level. To live the most personally valuable life possible relative to consumption and stimulation, one should take seriously the need rationally to trade-off between the presumed good of consuming more and the presumed bad of being overstimulated.

There are, of course, important disanalogies between the case of the Saver and highly stimulating modern societies. A particularly significant one is that, even if the Saver errs by saving, she at least considers her own welfare. By contrast, providers of stimuli in the public sphere—e.g.,

[5] One might also wish to inquire about the differential distributions among members of a society of costs and benefits associated with the presence of stimulating items.

[6] Here Hayek adopts Adam Ferguson's words.

billboards on publicly accessible highways, websites, and so on—do not usually consider whether the item they provide will be good for viewers or listeners exposed to it. (At the least, they certainly do not consider a given item's *stimulus contribution* to individuals' modern lifestyles.) It is true that some stimulating modern items such as brightly colored traffic lights are introduced into the public space for the public good. Yet numerous items, such as many billboards, internet advertisements, pervasive screens in restaurants, stores, and gyms, and so on, are not introduced into public spaces for the good of all, but for self-interested reasons which, at best, tend de facto to contribute to the common good. It would be an unwarranted logical jump to say that these items do not *serve* the public good because they have not been created for that purpose. But an awareness of how stimuli are introduced into public areas without a concern for the public good does give one prima facie reason to worry that the stimuli might be welfare-undermining. To argue the contrary, one must be willing to claim that a set of items, many of which were not even introduced for the public good, will altogether prove beneficial for, or at worst have no bad effect on, members of modern societies. This claim may indeed be true of a market system of two-party exchanges without significant third-party effects, where each party aims to increase its own utility. Notice, though, that many of the stimuli to which I am referring—neon signs, billboards, brightly colored clothes and cars, pervasive electronic screens, etc.—are salient to us precisely because of their third-party effects. An individual walking through an urban area, for example, can rarely avoid being distracted by such items even if she tries.

In modern societies, stimulating items are everywhere to be found, but the effect of the whole set of them, or even a substantial subset of it, readily goes unconsidered. How can this be? To see how, consider a parallel: The Saver gradually accumulates items, only years later realizing that, all along, he has been surrounding himself with clutter! This realization comes after the Saver has reached a tipping point and now has a deeply ingrained habit of excessive saving that is difficult to break even if he knows it to be welfare-diminishing. Similarly, modern societies gradually accumulate more and more "clutter" in the form of a plethora of diverse stimuli—another neon sign here, another billboard there; another flashy internet advertisement here, another constantly running TV news screen there. Yet, unlike the Saver's environmental transformation, our society's transformation is occurring (and has occurred) rather rapidly, despite our not noticing many changes that take place in, say, a given week or month. This causes a good many of us, as members of the public, *to miss the massive stimulus-change that is continually occurring before our very eyes*. We have a fleeting awareness of particular changes but never develop a sufficiently comprehensive grasp of how the whole set of stimuli is changing. It is difficult to secure oneself against a potentially disvaluable set of stimulating phenomena (or disvaluable aspects of the set) when most people living among the phenomena are largely unaware of the set's gradual but dramatic expansion.

There is a compelling psychological explanation for the lack of comprehensive assessment both in the case of the Saver and in the case of contemporary society. Assessing a set of phenomena rather than one of its particular items is, in a certain sense, a psychologically unnatural and burdensome thing to do. Consider the fact that the benefits of saved items or valuable modern stimuli are often specific and definable, but the value of a single item's *absence* is not something of which one can easily become aware. An insight from political theory is instructive. In *Political Organizations*, Wilson (1973, p. 333) considers how government programs that "benefit a well-defined special interest but impose, or appear to impose, no visible costs on any other well-defined interest will attract the support of the organizations representing the benefited group and the opposition of none[.]" The costs are spread across the population such that no specific group is acutely motivated (or even aware of the need) to speak up. This is the concentrated benefits-dispersed costs thesis; it shows why some government programs garner sufficient legislative and popular support but others do not.

Applying this political insight to the case of stimulating items in modern societies, we see that stimuli which do not seem to impose costs individually (or seem only to impose trivial costs) will not immediately attract the attention of members of modern societies or those who theorize about them. An eye-catching advertisement will often confer an obvious benefit on the firm whose product is displayed, such as increased profit. But consumers who glance at such advertisements for mere seconds will not consciously tend to register any costs in terms of unwanted stimulation. Such costs are, in effect, invisible. They can include (e.g.) how the advertisement distracts one (as when a driver's thought process is suddenly interrupted by a billboard about a product) and how the information conveyed by the advertisement both penetrates one's cognitive architecture and becomes stored in memory with repeated exposure, despite one's having no prior desire that it be so stored.[7] This mnemonic process, which affects each of us, can diminish one's overall welfare. For instance, Jim might memorize scores of firms' advertising slogans from years of exposure, despite the fact that the cost of his being overstimulated by

[7] No doubt such penetration can sometimes be valuable, forming memories consumers can later draw upon when making purchasing decisions that add value to their lives.

the advertising outweighs any overall benefit he receives in terms of having more information about consumer products.[8] The informational and other stimuli forced upon him can also interrupt or block him from having other, more valuable thought processes, making his choice for him as to what to think by preventing him from choosing. Such scenarios occur frequently, as when pervasive television screens and piped-in audio in public and private venues suddenly *seize* one's attention.

Moreover, the benefits of engaging in the overstimulating modern lifestyle are often flashy, immediately obvious, and even quantifiable, while the costs are subtle, hard to grasp, and qualitative. A person who searches stimulating news websites several times each day enjoys a ping of excitement and, at times, gets access to information whose importance is obvious. The person enjoying these clearly recognizable benefits cannot easily take stock of the cost of disruption in terms of his patterns of thought, possibly detrimental neurological changes from screen exposure, and opportunities missed to engage in valuable activities such as enjoying conversation with family or friends.[9]

Another analogy, this one concerning economic subsidies, shows why members of modern societies would benefit by developing a greater awareness of the net stimulus cost of the environments (public and private) in which they live. It might not seem worthwhile for citizens and consumers to become aware of welfare losses they suffer from their state's subsidizing a particular industry. But even if each individual subsidy imposes a trivial cost on them, the *set as a whole* may impose a significant cost. Hence, citizens who lack a strong incentive to become aware of a particular subsidy may still have much to gain from becoming aware of the whole system of subsidies and how it affects them. Similarly, even if any particular stimulus associated with the modern lifestyle imposes a minor cost on members of modern societies, the cost imposed by the whole system of stimuli may yet be considerable. Members of modern societies might rationally lack a strong incentive to become aware of how particular modern stimuli affect them, even if (and without contradiction) it would be rational for them to try to understand how the whole system of modern stimuli affects them.

[8] We can add other possible costs and benefits to the ledger: for instance, the possible benefit of being "in the know" about a product that one's social companions might discuss, and the possible cost of using up some of one's mnemonic capacity.

[9] Dunckley (2014) discusses recent studies of the neurological risk of screen exposure.

Kinds of modern stimulation: perceptual and informational

Advertising is an important example of a pervasive source of stimuli in modern societies. Sneddon (2001, p. 15) observes that "[c]oncerns about advertising take one of two forms. Some people are worried that advertising threatens autonomous choice. Others are worried not about autonomy but about the values spread by advertising as a powerful institution." Sneddon is entirely correct that these are key standard concerns, and he makes out an interesting case for why this dual-concern view is misguided because those who subscribe to it have an "unduly narrow sense of what autonomy involves" (2001, p. 16). But there are also legitimate concerns about advertising which are importantly different from concerns about threats to autonomy broadly understood or to values. To see why, suppose that all advertising fully respected all parties' autonomy (say, it somehow received the tacit approval of all affected parties) and had no negative impact on any party's values. I contend that the advertising could nonetheless be concerning if it led to an inordinate degree of perceptual or informational stimuli. Let us describe and then assess the value of these kinds of stimuli in advertising and other stimulating domains of modern life.

Start with *informational* stimuli. St. Claire (2011, p. 25) describes the circumstances of countless individuals living in our information-rich era of advanced technology and media:

> …many channels of information [are] pouring forth torrents and torrents of data, images, and up-to-the-minute information. In daily life this reality looks something like this: glancing at a television in the kitchen each morning to break the silence and catch the weather or highlights of last night's Red Sox game; listening on the commute to an iPod for music or for the latest news or an uploaded book or recorded program; checking the smart phone for text or [voicemail] messages; arriving at work, and turning on the computer for the Internet to check on e-mail or the current Dow Jones numbers or surf for some amusing video clip on YouTube or a wall posting on Facebook.

On this realistic picture of daily life in modern, digital societies, one might say that widespread "informational overload" is now an entrenched feature of our "attention economy." For, as Levitin (2014, p. 5) observes , "[t]oday, we are confronted with an unprecedented amount of information, and each of us generates more information than ever before in human history." Such claims are borne out by the empirics. It is a striking fact that the amount of

information people take in increased *fivefold* between 1986 and 2011 (Levitin 2014, p. 6).[10]

Perceptual stimuli, too, have recently become far more numerous, varied, and widespread. Consider a partial list of perceptually potent items that pervade modern life: Electronic screens and lights; television (including news) and movies geared toward capturing ever-shorter attention spans and ever-higher tolerances for shock value; cell phones with diverse, catchy rings, sleek designs, and bright, colorful screens; websites with alluring designs and hyperbolic phrases aimed at grabbing attention and getting a high volume of additional clicks; the bright, eye-catching facades and décor of modern retail and other stores; men's and women's diverse, attention-seizing clothing and beauty accessories; automobiles which are shiny, stylish, and sleek; and, finally, pervasive, gripping advertising on billboards, the internet, and consumer products. Of course some of these items, such as colorful clothing, were enjoyed by premodern societies; and I am in no way suggesting that, say, we should all opt for drab wardrobes. But I submit that this list illustrates the singularly stimulating nature of modern perceptual life. For ours is a world whose stimulating artifacts—many of them clearly welfare-enhancing—are remarkable in their sheer number and diversity.

Having sketched a picture of the modern world of informational and perceptual stimuli, I shall now articulate a serious but overlooked cost of the stimulating nature of modern living. In providing stimuli of one form or another to members of modern societies, the items just canvassed render modern life far more *divided*, and our attention far more *dispersed*, than ever before. Here is the argument.

How we moderns "go through our day" is a process that is divided by what we see, hear, and, more generally, experience. Take an informationally provocative or perceptually jarring billboard. Or consider a bright, flashing internet advertisement with a catchy phrase. Each item immediately interferes with (in many cases) one's otherwise steady stream of thought. The item can even bring one to have thoughts *against one's own conscious plans*. Such stimuli, as I say, constantly "divide" up one's day: They break up the content of one's unfolding phenomenal consciousness, plausibly influencing the effect of that content on one's deeper cognitive structures.[11] The abundance and diversity of contemporary stimuli thus significantly affect how our mentality unfolds: Does it unfold in a *smooth* process characterized by natural transitions between perceptual experiences and non-perceptual thoughts? Or in a *choppy* fashion characterized by sudden changes in how we perceive and think about the world, including interruptions in our thinking from unwanted, eye-catching experiences prioritized by our sensory modalities? An example is instructive. Suppose that, during your commute to work, you are thinking through your workday ahead, musing about your goals, plans, and much else. Then—all of a sudden—you become *aware* of the fact that you *have unwittingly begun* thinking about the quality and cost of hamburgers at Hamburgers-R-Us! Now how did *that* happen? The answer is obvious: As often occurs, a billboard advertisement just entered your visual field, leaving an unmistakable imprint on your (conscious) mental content. Despite your plan to think through your day, your thinking has become "choppy" or "divided" because of an unanticipated disruption quite unrelated to the intended content of your thought.[12]

The lesson of the billboard example generalizes. For it also applies to stimuli from various sources such as flashy electronic screens, shiny cars, piped-in music, continually displayed news broadcasts in airports and other venues, and much else. New forms of electronic stimuli are increasingly pervading our lives: In countless cafes, gyms, and airports, and, increasingly, even at libraries, gas stations, and elsewhere (these sites now having audio and television displays); in our vehicles (via their audio and video displays) and our homes (due to the growing number of home computers, televisions, and other electronic displays); and, of course, on our person (via our phones). Low-stimuli

[10] Huxley's (1958, p. 44) fascinating insight about the growth of information in his era seems to apply equally well to ours:

> In regard to propaganda the early advocates of universal literacy and a free press envisaged only two possibilities: the propaganda might be true, or it might be false. They did not foresee what in fact has happened, above all in our Western capitalist democracies—the development of a vast mass communications industry, concerned in the main neither with the true nor the false, but with the unreal, the more or less totally irrelevant. In a word, they failed to take into account man's almost infinite appetite for distractions.

Huxley, who focuses on information that is distracting and irrelevant, is exactly right that Western media generate a torrent of information, much of it disvaluable (on which more soon). Of course, a system that generates some disvaluable information can still be quite valuable overall.

[11] Such division might be of particular interest to philosophers of mind. Even the "monitoring consciousness" that Block (2002) describes might be affected when, for example, a driver can be aware of a stop sign but not *consciously* aware of it, knowing he was aware after later recalling that he did stop at the sign. Similarly, we might be aware of perceptual and informational stimuli without being (phenomenally) conscious of it at the time. If so, is this awareness cognitively costly in some important sense?

[12] The only ways to avoid such stimuli are often ineffective, unreasonable, or themselves require constant meta-level monitoring—e.g., altering one's daily routes or shutting one's eyes and ears at the first sign of a minor intrusion. Taking such steps seems to require a constant uphill battle against our natural psychological and physiological dispositions to attend to novel, potentially important and interesting stimuli that come into our paths.

environments in which members of modern societies can lead their lives seem continually to grow sparser. The "choppiness" of modern mental states is evidently a function of this sparseness.[13]

We have just seen how perceptual and informational stimuli can influence one's conscious and subconscious mental content in ways one never intends. Although this impact on how one's mentality unfolds seems to me psychologically costly, the point I wish to stress here is that the potential disvalue of this "choppiness" must be accounted for in any sufficiently comprehensive evaluation of modern stimuli. This means that an account of advertising as welfare-threatening due to its impact on autonomy or values, even if insightful, is incomplete if it elides consideration of how stimuli from advertising contribute to the unprecedented and possibly welfare-undermining level of stimuli we experience in modern society. Advertising can no doubt stimulate one in ways that undermine autonomous choice or good values. But it can also be problematic simply because it overstimulates. The example of an excessively stimulating sign that invites autonomous choosers to adopt a value which is good but not very important to promote (e.g., a highway sign for drivers flashing the words, "Be pleasant while talking with your passengers!") shows that overstimulation per se can be a cost of advertising (in this stylized example, the cost coming from publicly funded advertising to promote a social practice).

We have seen that the phenomenon of comprehensive overstimulation from advertising and other sources is, in short, an elephant in the room. Any thorough analysis of social welfare disregards it to its detriment.[14]

How much we have changed: the contrast with premodern, agrarian life

It is a testament to the power of modern economies that they can supply numerous goods to countless, diverse consumers. It is also remarkable (indeed, a bit wondrous) that global markets have, in dramatic fashion, interconnected the interests and lives of people around the world. Yet one can still justifiably query whether the modern person's highly stimulating experiences—as a member of a post-industrial information economy in a globalized era—are, in the end, *good for him* on the whole. Does the stimulating nature of the modern lifestyle enhance the welfare of those who live it? Does the modern person's heightened stimulation help or hurt her efforts to achieve a satisfactory level of wellbeing? A natural strategy for getting an initial sense of whether modern stimulation is good for members of modern societies is to compare modern and premodern lifestyles.[15] This, of course, is a tall task for a single paper. So I will simply develop a comparison in regard to the levels and kinds of stimulation we have discussed that will be sufficient for our purposes.

Unlike the modern person, the premodern person—call him John—begins his day over breakfast in simple surroundings, say, in discussion with his family. As a farmer living prior to the industrial revolution that swept across Europe and the U. S. in the eighteenth and early nineteenth centuries, John ends his breakfast and proceeds to the field to complete a full day's work growing crops. He may receive some information at some point during the day from a visiting neighbor or from his family members on the farm. And he may be exposed to informational stimuli if he does some reading. As for perceptual stimuli, a sunset or sudden storm is likely the most perceptually dramatic input of a given day; though his life is, of course, dramatic and challenging in other important ways.

John is in a far different overall position, stimuli-wise, than the modern person.[16] To begin with, John's exposure to bright colors is minimal. Although he periodically sees (e.g.) some brightly colored birds flying by, or some eye-catching flowers, nothing he sees immediately grabs his attention in the jarring way that a neon sign or shock-news discussion *grabs* ours. John is, moreover, virtually never exposed to minute-by-minute "breaking" news.[17] The shock-news to which many of us are exposed on a daily basis concerns cultures or people that, very often, we do not know and have a small likelihood of being able to help. This is not to deny the value of getting information out

[13] There may even be an inverse correlation: As the low-stimuli environments in which one lives become sparser, one's mentality unfolds in an increasingly choppy way. A full assessment of this claim would need to consider the ability of individuals to adapt to stimuli. For some individuals, the same stimuli, and perhaps also stimuli of the same kind, may become *less* stimulating with additional exposure.

[14] "Social welfare" is a clumsy term, but there may be no better alternative. I use it to mean the total welfare of individuals in a society.

[15] Unlike previous industrial and agrarian societies in Europe, modern European societies have more robust, technology-heavy service sectors. See The European Foundation's Second European Survey of Working Conditions, cited in Bradley (2006, p. 178).

[16] A distinguishing feature of the transition from premodern to modern life is the shift from agrarian to urban living. For all we know, this change may have diminished the ability of post-agrarian populations to attend to the details of nature, giving one some reason to think nature may have been *more* stimulating for more attentive, agrarian populations. Even so, the modern person in an urban or suburban setting still confronts so many more (and more varied) stimuli than does a premodern person living in a rural setting that modern life clearly seems more stimulating.

[17] If he is, it is far more likely than our breaking news to be news that matters to him a great deal: for instance, information about a new major political leader or the outbreak of a war.

about distant needy strangers who could be helped. There remains, however, the important question whether our level of exposure to news (international or domestic) about death, famine, war, and violence in far off places is reasonable overall. Unlike us, John is not exposed to news that frequently consists of gossip and aims to make one sad, scared, or worried: *sad, scared, or worried enough to be attentive*.[18]

John's day includes little of the sorts of stimuli our days do. He is generally not exposed to media that aim to seize viewers' attention and alter their beliefs by means of jarring and gripping stories. Nor does John encounter flashy billboards, display screens, internet advertisements, piped-in audio, and so on. Relative to the modern person's life, his is simpler and marked by greater experiential integrity and continuity. He is not subject each day to diverse stimuli which often amount to forms of psychological manipulation. Nor does his life consist largely in a series of experiences in which he is continually pulled in one direction or another: first to *this* news story, then to *that* billboard advertisement, then to *this* brightly colored car, then to *that* loud cell phone ring. John's life is, in this way, simpler and less attentionally divided than our own.

For illustration, consider a hallmark perceptual experience of countless people throughout human history: moving from *viewing one nature scene to the next* while hunting, fishing, farming, washing clothes, teaching the children outside, tilling a field, or herding. In seeking to bring home a source of food for dinner, the hunter moves from place to place, viewing various nature scenes throughout the day. Similarly, when the village grandmother washes clothes in the local stream or the fisherperson moves from spot to spot, each takes in different views of a body of water and the surrounding natural scenery. Modern persons, in contrast, often begin their days by viewing attention-grabbing messages on an LED computer screen. Then, while commuting, they see fast-moving, shiny vehicles of myriad colors and styles navigating a road system studded with bright traffic lights and attention-seizing advertisements. All along, in their vehicles, they listen to the radio or other audio. And this is just the *start* of their day: a day full of artifactual stimuli which are highly gripping in ways natural stimuli are not.

This sort of stimulating lifestyle seems disruptive of two key goods: (a) steady, uninterrupted thinking about ideas, plans, situations, and people one cares about; and (b) attentive, uninterrupted interactions with people—e.g., loved ones—about whom one cares. Yet we continue to engage with increasingly stimulating items—more screens, more noise-making electronics, and so on—with little concern about the fact that, *all along, we are ramping up the net stimulus we experience in our daily lives*.[19] If, as I have argued, the added stimulus is plausibly costly other things being equal, we are left to wonder what sorts of responses might be warranted.[20]

Before considering how theorists and practitioners can respond to stimuli-induced welfare losses in modern societies, I wish to emphasize two important points. First, I have not attempted to lay out *all* the ways in which modern societies can be overstimulating for their members.[21] Yet, while that is too large a task for a single article, it is worth briefly saying why comprehensive overstimulation also arises from *communication overload*. Here is why. Modern, technological life requires of its members a great deal of interpersonal interaction via electronic media. From the perspective of a given member of a modern society, the expected benefits of communicating with one particular person (or via one particular digital platform) may outweigh the expected costs. It might therefore seem prudentially rational for one to engage in this sort of communication: so doing seems to advance one's overall interests. Suppose, however, that someone employs this kind of cost-benefit decision procedure only when assessing the value of an individual kind (or degree) of communication, and not when considering bigger subsets or perhaps even the entire set of one's digitally mediated communications. Such a person can fall into a welfare-undermining state of communication overload. The overall cost of the general pattern of communication can outweigh the overall benefit, even when the benefit of a given type or

[18] However one cashes out "psychologically healthy," it seems rather psychologically unhealthy to be hearing depressing news to which one usually can do, or does, nothing in response. Even if psychological health were to require some diverse experiences such as those we have in the contemporary world, the diversity and attention-seizing nature of our perceptual experiences seems so great that it would be at least a little surprising if it turned out to be healthful for us.

[19] In addition to the literature cited above, see Scott (2015) for recent discussion of the impacts of technology and media in various domains of contemporary life. See also Rich (2015) on challenges to adolescent development in the media age, and St. Claire (2011, esp. pp. 32–38) on how our attention spans our shrinking, we are reading less, and surprising neurological changes are afoot, all due to our greater use of electronic devices.

[20] Of course, we can inquire about such responses (on which more shortly) without denying that the causal arrow of, say, stimulation and uninterrupted family time sometimes goes in the other direction. A remarkable advantage of the many technologies we have today is that they free us up to spend additional time with loved ones. So, while the stimuli that such technologies put in place can undermine the vitality of our personal relationships, this is not a necessary outcome. The opposite result can obtain depending on the stimulating technology in question and the use to which it is put.

[21] See Bradley (2006, p. 176) for an extensive list of sources of overstimulation such as excessive information, work, and much else. Bradley (2006, pp. 189–191) catalogues stress phenomena caused or enabled by information and communications technology (ICT).

instance of communication, taken by itself, outweighs the cost. Once again we have disvaluable overstimulation at a comprehensive level.[22] And even if the pattern of communication is valuable overall, there might be good ways to mitigate its stimulation-related costs.

The other point worth emphasizing is this: I do not mean to deny that there are tremendous benefits to having these stimuli around. From the sources of stimuli we get convenience, social interaction, and the capacity to alleviate various kinds of sickness and suffering. I have insisted only that theorists and practitioners have good reason to care about mitigating the costs of overstimulation, not about getting rid of the stimuli altogether by eliminating their sources (e.g., the internet). That way lies the madness of an intolerable loss of human welfare.

Progress in the face of comprehensive overstimulation

Although attempts to consider the potential drawbacks of modern stimulation, including how it divides our attention, go back at least to the late nineteenth century, today we face a new social situation. Our situation is marked by the coalescence of a surge in digital innovations, the rise of a form of globalization much more pervasive and powerful than that of the late nineteenth-century, and the dramatic metamorphoses of industrial economies into information economies. Together these elements bring much urgency to the question how individuals and institutions ought to respond to the great increase in stimulation within modern societies. We are talking about, at the very least, hundreds of millions of people. So a great deal of happiness or misery, flourishing or languishing, hangs in the balance.

Social and individual progress in the face of overstimulation

If my diagnosis of the impact of modern stimuli is basically accurate—that, simply put, most of us are overstimulated—can this disvaluable aspect of modern life be improved? What might progress look like, and how might it be achieved? For the sake of conceptual simplicity, I shall divide progress into social progress and individual progress.

Start with *individual* progress. To make individual progress, one could (in theory at least) simply avoid overly stimulating websites, television shows, other stimulating electronic media, and other sources of stimulation. In this vein, perhaps we should simply silence our phones, turn off the television, and minimize our exposure to news media and the internet. This strategy, however, obviously would not work in the world in which we live. Most of us could not disconnect from stimulating technologies (e.g., the internet) without therefore incurring unacceptable social or professional costs such as the loss of business, friends, or other vital goods.

Fortunately, though, we can intentionally reduce our overall exposure to stimulating items. In addition, we can decrease our exposure to individual items apt to overstimulate. And, finally, we can rationally *adapt* to some sources of overstimulation. For example, in a study showing the positive effects of meditation in computer-based work environments, Levy et al. (2012) show that "human attention is a trainable resource." It is a resource that can be harnessed in ways that enable multitasking agents to flourish despite their frequent exposure to distracting media and internet stimuli. This basic adaptive strategy applies more generally: By recourse to any of various psychological and holistic mental health practices, and perhaps by following one's intuitive sense of the (dis)value of exposure to various stimuli, one can avoid many of the welfare-undermining instances of overstimulation that are part and parcel of the modern lifestyle. There are, then, some practicable ways for individuals to mitigate certain undesirable effects of the stimulating digital lifestyle.

But what about *social* progress? One way to move forward as a society is to develop social norms that disapprove or question the legitimacy of certain sources of stimuli. Take, for example, newscasts or movie previews whose content grabs one's attention by being objectionably dramatic or hyperbolic. Speaking out against such sources of overstimulation may be an appropriate strategy. A vanguard of social reformers, for instance, could aim to reform television news shows that lure people in by appeal to viewers' knee-jerk perceptual and psychological responses. Suppose an important news show forgoes substantive engagement with issues about which viewers care, aiming instead to seize viewers' attention by a combination of gossip stories and gripping but gratuitous stories about (as one often sees on the news) murders and other heinous acts. A social group could increase public awareness of this fact by criticizing the stimulus-source online or in other forums. To be sure, such a strategy should be pursued with sensitivity: That members of modern societies often enjoy such stimulating shows should be considered, as should worries about paternalism and imposing one's own normative views on others. The basic idea, at any rate, is for social groups to raise awareness about the objectionable mechanisms by which especially gripping newscasts (and certain

[22] Massimini and Peterson (2009) find that ICT stresses U.S. college students in multiple ways that impair their functionality. See fn. 2 above on important recent discussions including Dreyfus (2001), Bauerlein (2008), and Turkle (2011); Elgesem (1996), Nissenbaum (2004), and Tavani (2007); and Vallor (2015) and Dunckley (2014).

movie previews, etc.) capture and sustain viewers' attention, and some ways to resist their pull.

Moral dimensions

In addition to the question how to progress socially and individually, there is also the important question of whether and if so how producers of overstimulating items might be morally required to modify their practices. I will conclude this paper by first responding to this question and then outlining, in the next section, some ways for theorists and practitioners to address the threat of comprehensive overstimulation posed by life in the modern world.

If producers of hyperstimulating items harm people who are exposed in one way or another to them, then these producers might seem to have a moral duty.[23] The posited duty—if there is one (on which more shortly)—is a prima facie duty in that it can be outweighed or overridden by rival considerations. Purveyors and displayers of especially stimulating items might have a duty to become sensitive, and respond appropriately, to the fact that they exercise a sort of soft control over others because they produce items that seize others' attention in ways we have seen. To be sure, producers already tend to contribute significantly to their societies by making possible numerous positive-sum economic exchanges. But they should also realize that they create not just their products but also our shared social, work, and home environments: crucial spaces in which individuals dwell and live their lives. Stimulating items in the modern world are all too often produced, distributed, sold, and publicly or privately displayed with the thinnest concern for how the items might prove detrimental to those individuals whose attention they will seize. Producers should be sensitive, I submit, to the plausible fact that those who shape others' environments, thinking, and lives in important ways have a prima facie moral duty to do so in ways that reflect a sufficient concern for the parties predictably affected.

Take the familiar example of a business that advertises online using the tools of shocking language and bizarre, flashing pictures in order to seize consumers' attention. Assume *arguendo* that the business provides a valuable product to its consumers, and its members are rightly proud of that fact. Even in this case, the business would arguably be operating in an ethically questionable way if it caused a great deal of perceptual or informational "clutter" in the society—like the undue clutter in the Saver's home—or if, for instance, its advertising were disproportionately attention-grabbing relative to the quality of its product. (One might fill in the ethical details here in various ways.)[24] Now if, however, the business's product actually contributed very little to the flourishing of consumers (and especially if the firm's leaders knew this), then this firm's stimulus-contribution in the form of its attention-seizing advertisements would be presumptively unethical. The business's activities, one might reasonably think, violate individuals' rights to live in a public space that is not inordinately encumbered by stimulating advertisements.[25]

Nonetheless, whether firms that make significant stimulus-contributions to our shared living spaces have a moral duty to lessen their contributions is by no means a settled question. For suppose that businesses marshal the stimulating resources of modern economies to maximize their profits. Assume as well that, by doing so, they knowingly undermine the psychological welfare of consumers in ways they could avoid while still remaining sufficiently profitable. Now consider a widely held view of the moral standing of firms among economists, philosophers, and business theorists: in Friedman's (1970) words, "there is one and only one social responsibility of business—to use its resources and engage in activities designed to increase its profits." Perhaps if we add a plausible further condition to this view (a condition Friedman himself seems to support)[26]—that firms are dutybound to maximize profits while *also* complying with commercial laws—then firms have no further moral duties vis-à-vis overstimulation or anything else. The only relevant moral duty firms operating in a democratic polity would have, on this view, is to follow any laws aimed at preventing such detrimental outcomes.

In general, any moral duty firms might have to lower their stimulus contributions will, it seems, depend on the moral duties that firms face more generally. I need not (and shall not) take a stand on that vexing question here. But regardless of one's views on whether certain firms have a

[23] The producers I have in mind are, for example, designers of websites, movies, news, and other sources of stimuli.

[24] A business so described might operate unethically from a consequentialist standpoint if it undermines the ability of consumers to maximize the aggregate welfare. Or it might operate unethically from a deontological perspective if it inadequately respects consumers through manipulation of their perceptions and psychologies solely in order to attain profit, thus using them as mere means. (Such firms would act differently from firms that solely aimed to maximize profits but did not treat people as mere means.) Or the business might be problematic on virtue ethical grounds if its members viciously proliferate messages in society for its own (morally unjustified) gain at the expense of others, or if they hinder others who seek to cultivate the moral or intellectual virtues.

[25] Alternatively, one might contend that whether a given business has a moral duty to desist from certain stimulus-increasing activity depends on whether enough other firms comply with the duty. In a low-compliance scenario, firms would not have moral duties to reduce their stimulus contribution, even though it may still be morally valuable for them to do so when feasible.

[26] Friedman (1970) says that a given business has only this one responsibility "so long as it stays within the rules of the game".

moral duty to lower (or not raise) their stimulus contributions, firms may end up doing so de facto due to the pressures of market competition. A major upside of modern market economies is their ability to innovate in response to social problems. Ultimately, consumer demand may shift in ways that influence firms to produce less stimulating items. Perhaps demand for the development of virtual reality technologies like to Google Glass will eventually enable people to block undesired sources of stimulation in their social environments, much as we now use ad blockers to eliminate undesired advertisements on our internet browsers. This change would involve the market process mitigating the stimulation problem without needing to either invoke a moral duty on the part of firms or resort to legal coercion.

A multidisciplinary undertaking

A blooming, buzzing confusion

In contemporary life one often gets the sense that just about everywhere we go, and in just about everything we do, we are bombarded by informational and perceptual stimuli that have the potential to distract us from what truly matters in life: goods such as family, friends, flourishing, and inner peace. For countless millions, modern life has something like the character, in William James's memorable words (1890, p. 462), of a "blooming, buzzing confusion."[27] If the parade of stimuli that we daily encounter but rarely seem capable of eluding is harming us in the comprehensive way articulated in this paper, then this scenario demands systematic investigation by sociologists, social scientists, philosophers, and psychologists. Even if the overall benefit of the technologies and other *sources* of overstimulation (e.g. stimulating internet news sites) clearly outweighs the cost, it is worth investigating how to mitigate the cost of excessive stimulation from one's overall environment. If we are indeed comprehensively overstimulated, this fact also motivates the need for social theorists and ethicists to provide meta-level guidance about proposed methods of inquiry and, more substantively, to determine the rights of those who live in highly stimulating environments and the duties of those responsible for the stimuli. Too much human welfare is at stake, I suggest, to think otherwise.

[27] But presumably it is not nearly as confusing as a baby's experience of the world, which James describes in *Principles of Psychology*. Also, I implied above that different people will experience the highly stimulating modern world differently. Whereas many members of modern populations might incur an overall cost from the stimuli they encounter, many others might not.

Addressing the issue

Here is a general prescription for how to address the problem of overstimulation:

(a) Social scientists and psychologists should document, empirically, the impact of comprehensive overstimulation from innovations, electronically mediated relationships, and so on, on individuals' happiness.
(b) Depending on the results of (a) and the opportunity cost, psychological associations, private groups, and policy analysts should consider the merits of public information campaigns aimed at raising awareness of the concept and sources of *comprehensive* disvalue that have been discussed in this paper and underappreciated by the public at large.

Here are some more specific recommendations. (1) Theorists should consider depression rates or happiness levels in different places and eras, comparing overall levels of stimulation in modern societies with those of more traditional (extant) societies.[28] (2) Theorists should conduct laboratory experiments where participants' happiness levels are tested before and after exposure to a moderate level of stimuli that represent the *set* of stimuli constituting an ordinary modern person's overall stimulus level. The participants could then, perhaps, be tested after exposure to far more or far fewer stimuli (or the same level but different kinds of stimuli). Finally, (3) game theorists working on prisoner's dilemmas should treat contemporary comprehensive overstimulation as a fecund target.

One hypothesis to test concerning (3) in particular is that businesses that are the "loudest," brightest, and stand out the most, inside and out, will attract the most consumers—i.e., *win*—even if most or all affected parties would be better off, and most businesses no worse off, if *every* business reduced its net stimulus contribution to society. The results of such a study would be both practically important and, perhaps, theoretically surprising. Another, more general hypothesis to consider is that, in an important respect, members of modern societies function similarly to how gambling or other addicts do. This hypothesis should be tested as regards not only individual sources of stimuli but also, *apropos* of the line in this paper, individuals' overall stimulus environments. Here is the thought motivating this hypothesis. By winning unpredictably, a gambler can become addicted due to the sheer excitement of gambling, gambling even when he knows the activity is causally responsible for significant personal losses of

[28] Earlier I noted literature on the risks generally associated with stimulation from particular modern technologies. Here it is worth emphasizing that other literature further carves up the terrain according to the parties affected. See, e.g., Moreno and Strasburger (2014) on how digital technology affects adolescent development.

wealth and welfare. Perhaps such a pattern also holds for members of modern societies. Being unable to predict *ex ante* the precise timing of the next major news or social media update, individuals are prone to continually check news sites, social media, and so on, waiting for that next unpredictable ping of excitement.[29] In this way, their behavior, like the gambler's, is randomly reinforced. They devote substantial time to randomly reinforced checking, sometimes developing "choppy" welfare-undermining mental patterns as a result of their frequent but intermittent searching.

Further research and outreach by professionals from information and communications technology, psychology, and cognate disciplines would shed light on how members of modern societies can continue to benefit tremendously from using stimulating items while incurring fewer costs. Once individual members of modern societies begin to *think* in terms of the value or disvalue of their net levels of stimulation, they will be equipped to *change* their lives in important ways. This paper's suggestive analogies—concerning economic subsidies, dispersed political costs and concentrated benefits, and, especially, the Saver—are an initial attempt to exemplify such thinking. Having seen how a set of stimuli can be welfare-undermining even if no individual stimulus in the set is, we are now better equipped to confront the challenge of comprehensive overstimulation facing members of modern, digital societies.

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[29] As is well known, a member of a modern society can become addicted to these activities.