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Market paternalism: Do people really want to be nudged towards consumption?

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Market paternalism - Do people really want to be nudged towards consumption?

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Market paternalism – Do people *really want* to be nudged towards consumption?

Abstract

Modern societies, almost unequivocally, pursue the goal of economic growth. The central normative reason for this has recently been called the 'consumerist claim', namely the standard economic claim that increases in consumption (i.e. growth), by and large entail welfare increases. However, the consumerist claim does not take account of behavioral economics. Specifically, it disregards that consumption increases can also be achieved by nudging, as practiced e.g. in marketing or advertising. Remarkably, proponents of the consumerist claim are often vocal critics of governmental nudging, which is decried as manipulative and paternalistic, but are simultaneously dismissive or apologetic about market-derived nudging. Here we argue, that in light of behavioral economics Adam Smiths 'invisible hand' will often produce outcomes *as if* it belonged to an 'invisible paternalist', who systematically and efficiently nudges individuals towards ever increasing consumption. Specifically, we develop the notion of 'market paternalism' (MP), based on a synthesis of behavioral and evolutionary economic reasoning. MP entails three central properties: First, unregulated markets naturally give rise to pervasive nudges, modifying our behavior, preferences and beliefs in ways beyond our conscious awareness and control. Second, these nudges will coalesce towards an emergent system-level *end*, that cannot be derived from any coherent notion of individual preferences. Third, MP operates in part by a cultural evolutionary mechanism, implying that it will occur with computational and coordinative power far beyond any individual (or government). To assess the potential practical relevance of MP, we survey the literature, finding clear evidence that MP drives or exacerbates numerous pressing societal problems, including rampant obesity, mass surveillance and the climate crisis. It does so by covertly and incessantly nudging not only our behavior, but also our preferences, values and beliefs towards the single goal of increasing consumption. The surprising consequence is that, in light of behavioral economics, unregulated markets should be expected to systematically subvert individual autonomy and rationality, the very values typically invoked to defend the consumerist claim

Introduction

The 'consumerist claim' states that, outside a small set of 'market failures', any consumption increase also reflects a welfare increase (Fellner and Goehmann, 2020). Why else, so the standard reasoning goes, would a free and rational consumer make the decision to consume? The consumerist claim concisely summarizes the central normative prescription of standard economics: Maximizing economic activity, i.e. incomes and consumption, will maximize welfare (Dold and Schubert, 2018). It is also the central moral reason why modern market-based societies

pursue the goal of economic growth: Growth is assumed to make us all progressively better off (Mikkelson, 2019).[1]

The consumerist claim, and standard economics more broadly, is based on the assumption that well-informed, rational consumers act in accordance with what they 'really want' (Sugden, 2017), i.e. a fixed set of well-defined preferences. However, a steadily growing body of behavioral economic research undermines this assumption (Ariely, 2008; Mullainathan and Thaler, 2000; Thaler, 2018a), showing for instance that obesity can in part be driven by self-control problems, i.e. by individuals not acting in accord with what they maintain to 'really want'. More generally, empirical research has documented a plethora of ways in which the context of a decision, or 'choice architecture' (Thaler et al., 2013) influences decisions and preferences (Dold and Schubert, 2018; Witt, 2012). This has opened the door for external parties to subtly change aspects of a choice architecture, thereby 'nudging' individuals towards specific behaviors (Thaler and Sunstein, 2008).

The perhaps most relevant precipitate of behavioral economic research has been the concept of 'libertarian paternalism' (Thaler and Sunstein, 2003). Libertarian paternalism maintains that governments should sometimes 'nudge' individuals towards decisions that are in those individuals own best interest, such as towards healthier diets, getting vaccinated, or saving more for retirement (Thaler and Sunstein, 2008). Nudging is contrasted with more coercive government interventions, as it preserves the liberty to make e.g. unhealthy choices (thus *libertarian* paternalism). A typical example of libertarian paternalism is to nudge individuals towards healthy life styles, for instance by placing healthy food options into more prominent positions in a cafeteria display. Some nudges, such as setting default options, can have remarkable effects, for instance shifting consumption of white bread to whole bread by 74% (van Kleef et al., 2018) or organ donorship by ~25% (Rithalia et al., 2009). The key point is that the nudge should not affect a rational decision based a well-defined preference.

While libertarian paternalist policies have become quite popular among governments (Benartzi et al., 2017; Patel, 2021; Thaler, 2018a), they remain controversial among many economists (Hausman and Welch, 2010; Rizzo and Whitman, 2021). There are numerous valid reasons for this, including a fundamental doubt about whether governments can be depended upon to have

[1] There are a number of other much debated arguments for economic growth, the discussion of which goes well beyond the scope of this article. However, without the additional invocation of the consumerist claim, these arguments appear to describe addiction-like mechanisms: they argue not why growth is good, but why current economies would become unstable without continuous growth. Such mechanisms include the dynamics of credit (i.e. the need to generate interest on credit, Jackson and Victor, 2015), productivity growth (i.e. the need to create new jobs, Jackson and Victor, 2011) or rising inequality (i.e. the need to avoid excessive inequality, Piketty, 2014). Additionally, there are arguments that growth is a consequence of zero-sum games, e.g. competition for status (Binswanger, 2006; Veblen, 1899) or for 'school districts' (Frank, 2011). It is important to recognize that most of these arguments calls for growth simply to maintain welfare levels and prevent social or economic collapse. The only normatively positive reason for growth remains the consumerist claim.

consumer's best interests at heart. For instance, Sugden (2017) titles an insightful critique of libertarian paternalism: 'Do people really want to be nudged towards healthy lifestyles?'. His central conclusion is that it is impossible to know with certainty, since even when individuals claim they want to be nudged, such claims might be affected by social pressures or perceived norms or expectations and not reflect true preferences. Given such uncertainties, the reasoning is that we should be more willing to trust individual's (pre-nudge) actions than their claims. Yet if individuals do not want to be nudged towards healthy lifestyles, then a government implementing a respective policy would simply be manipulating individuals according to its own agenda. In this view, nudging fundamentally undermines consumer autonomy, i.e. the ability to make free, self-determined choices, and should thus not be employed by governments.

Few would doubt that marketers and corporations often employ similar nudging, e.g. through advertising or product placements. However, authors critical of governmental nudging seem to be far less concerned about such market-derived nudging (MN). For instance, while Sugden (2017) asks if 'people really want to be nudged towards healthy lifestyles' by governments, he does not consider the question 'if people really want to be nudged towards fast food consumption' by corporations. This imbalance is particularly noteworthy because of overwhelming evidence that the second question is of considerable relevance in practice: Among obesity researchers, there is strong consensus that corporate nudging is a significant causal factor in the worldwide 'obesity pandemic' (e.g. Swinburn et al., 2019, this is discussed in more detail in section 5.1).

How can we explain this apparent imbalance? It appears as if, by default, market nudging is viewed as unproblematic, while governmental nudging is viewed as problematic. Consider, for instance, the scholarly literature that *does* address market-derived nudges. It is split into two fundamentally opposed views (Susser et al., 2019), let us call them a *mainstream* and a *critical* view.

The *mainstream* view suggests MN is ultimately unimportant, or potentially beneficial. For instance, many economists maintain that that consumers are at least mostly rational (e.g. Kirkpatrick, 1994), such that nudging (and behavioral economics per se) is of limited import, at least outside a few idiosyncratic 'behavioral market failures'. Researchers have also pointed out that many nudges in the 'cacophony' of market interests might 'cancel one another out' (Hausman and Welch, 2010), such that they should not really unfold any relevant systemic effects. Meanwhile, marketing scholars have argued that companies will generally nudge consumers only in desirable ways, since only this will serve their profitability in the long term (Dowling et al., 2019; Ratner et al., 2008). The unifying tenet is that we need not worry about market-derived nudging. There may be occasional behavioral market failures, but addressing these via regulation will often do more harm than good.

By contrast, a *critical* view, outside the economic mainstream, and driven by journalists as much as by academics, has aggregated numerous examples of welfare-undermining or deceptive nudges in markets, which seem to clearly call for regulatory (or alternative) responses (Stoeckl and Luedicke, 2015). This somewhat fragmented literature has given rise to a variety of terms and concepts over the last 60 years, most notably 'hidden persuasion' (Packard, 1958), 'market manipulation' (Hanson and Kysar, 1999), 'phishing for phools' (Akerlof and Shiller, 2015), 'sludge' (Thaler, 2018b), and 'dark patterns' (Mathur et al., 2019). While between them, these strands of literature have accumulated significant empirical evidence, they have had remarkable little impact on the mainstream economic outlook (Fellner and Goehmann, 2020). In fact, the same can be said of behavioral economics more generally, which to date appears to have provided no significant challenge to the consumerist claim. Interestingly, the critical camp also tacitly reinforces the notion that *most* market nudges are unimportant, by largely disregarding ubiquitous, but *not clearly problematic* cases. For instance, the use of 99 cent prices, which presents an almost paradigmatic case of market nudging (Thomas and Morwitz, 2005), is pervasive but seems insufficiently harmful to warrant attention. While authors of the critical camp would probably not endorse the view that *most market nudges are unimportant*, an exclusive focus on only *clearly problematic* nudges nevertheless tacitly reinforces such a view.

Here we propose a third approach, rejecting the notion that market nudges are unimportant in general (mainstream view), or unimportant unless they can be shown to be clearly questionable (critical view). There are two main reasons for this which we briefly summarize here and elaborate throughout the remainder of this paper:

- First, normatively ambiguous market nudges still raise the fundamental question of consumer autonomy. Paraphrasing Sugden (2017), we can ask: Do consumers really want to be nudged towards consumption? This question appears particularly relevant as marketing often aims to nudge consumers towards novel habits, or even towards novel preferences and desires (Franklin et al., 2022; Schubert and Cordes, 2013).
- Second, focusing exclusively on *clearly questionable* nudges distracts from the overwhelming majority of market nudges and their systemic consequences. Yet such consequences might be significant. Indeed, Nobel laureates Akerlof and Shiller (2015), have suggested that market nudging has been a principal driver for exponentially increasing consumption, even in countries where such consumption increases cannot be linked to any clear welfare benefits (Jebb et al., 2018; Mikkelson, 2019).[2] In light of the dramatic environmental consequences

[2] Remarkably, there is ongoing scholarly debate about whether the relation between incomes and wellbeing diminishes according to a log-linear function, or if it fully saturates of even reverses (Jebb et al., 2018; Killingsworth, 2021). The mere existence of this debate constitutes evidence that the data allow no clear conclusion about whether economic growth beyond a certain level still increases welfare.

of such consumption, the mere possibility that it partially derives from systematic, autonomy-undermining nudging clearly merits attention.

Instead of focusing on the normative implications of individual MNs, our focus is on system-level the causes and consequences of MN. We argue that in unregulated markets, MN must be expected to naturally emerge and coalesce into a coordinated system–level force, which we term market paternalism (MP). Importantly, the concept of MP is agnostic about the normative status of individual market nudges, i.e. it is normatively neutral *per se*. Instead, it focusses attention on the predictable aggregate consequences of MN, which we argue entail perpetually increasing total consumption. Our account combines elements from the previous literature on market nudging (most importantly Akerlof and Shiller, 2015) with an evolutionary economic perspective (Braganza, 2022; Hodgson and Knudsen, 2010). Similar to Akerlof and Shiller, we emphasize that extensive nudging is the natural consequence of free-market competition. The evolutionary perspective adds an emphasis on the open-ended, cumulative innovation of nudges and provides a positive conception of the emergent 'end' of MP. Overall, our account raises the question to which degree MP, rather than fixed individual preferences, are driving the exponential growth in consumption and material footprint among rich nations. This question is particularly relevant in light of the intensifying environmental (and social) crises driven by perpetual economic expansion (Ripple et al., 2021; Swinburn et al., 2019; Watts et al., 2019; Zuboff, 2019).

The remainder of this paper will be structured as follows.

Section 2 will introduce the previous literature on nudging in general and MN in particular. Specifically,

> **Section 2.1** will introduce the concepts of nudging and libertarian paternalism in more detail, focusing on the arising ethical concerns pertaining to individual autonomy and dignity raised in governmental contexts.
>
> **Section 2.2** will begin to examine why similar ethical concerns are less often raised in market contexts, pointing to some fundamental epistemic obstacles, namely i) that corporations will often not declare nudges as such and ii) that it is difficult to know what consumers really want. As we will see, given the first obstacle, the second can be used both to criticize governmental nudging and to defend market nudging.
>
> **Section 2.3** will provide an overview over the literature critical of MN, situating the present perspective within its context.

Section 3 will propose that MN should be expected to cohere to form a clear systemic effect, termed market paternalism (MP).

Section 3.1 will begin to explore the aggregate effects of market nudging. Specifically, it will ask if market-derived nudges can plausibly be assumed to "cancel one another out" (Hausman and Welch, 2010).

Section 3.2 will introduce the cultural evolutionary force, or evolutionary algorithm, that has been proposed to arise from market selection by evolutionary economists (Alchian, 1950; Cordes, 2019; Hodgson and Knudsen, 2010), and which we argue coordinates MN into a coherent force.

Section 3.3 will add precision to this notion, by introducing the concept of the *emergent market-level proxy* (Braganza, 2022) as the 'fitness measure' of market selection, or the 'objective function' of the evolutionary market algorithm. Maximizing the this *proxy* can be seen as the single-minded purpose or emergent '*end*' of MP.

Section 3.4 will elaborate a central implication of the claim that market paternalism arises from a cultural evolution mechanism, namely that it will have computational power far beyond any participating individual (Smaldino and Richerson, 2013), and will support the open-ended, cumulative innovation of MNs (Cordes, 2019; Mesoudi and Thornton, 2018). This reveals the notion of a static 'behavioral market failure' as fundamentally misleading.

Section 4 will argue that, in addition to typical behavioral nudges, MP draws on a broad range of tools such as the manipulation of preferences, beliefs and even social and cultural dynamics in highly sophisticated, and fully predictable, ways. 'Nudging' in this context is defined broadly, as non-conscious behavioral influence.

Section 4.1 will draw on another key behavioral economic deviation from standard economic assumptions, namely that preferences are not fixed but can be learned. MP should be expected to systematically harness preference learning dynamics, whenever this increases the proxy.

Section 4.2 will outline some even broader cultural or economic patterns which systematically harness behavioral biases to support proxy-optimization, namely i) planned obsolescence, ii) systemic obfuscation and, most broadly, iii) fostering "consumer culture" (e.g. Czarnecka and Schivinski, 2019).

Section 5 will explore potential systemic consequences of MP. While MP and its effects are arguably not inherently undesirable, system-level evidence clearly points to a number of problematic consequences.

Section 5.1 will briefly review evidence of MN towards addictive consumption patterns and their consequences, such as increasing obesity levels.

Section 5.2 will highlight some inescapable environmental implications of nudges towards consumption, identifying MP as a driver of the climate crisis.

Section 5.3 will take a bird's eye view, and explore if MP can help explain the lack of an unambiguous positive relation between economic growth and measures of subjective and objective wellbeing beyond a certain income threshold.

Section 6 will conclude, outlining what the present account implies for our theoretical understanding of market dynamics as well as the potential practical implications thereof.

1. Market nudging (MN)

2.1 Nudging or manipulation

There is a rich critical literature considering the ethical implications of nudging. While this literature has been developed primarily with a focus on governmental nudging, it is often left unclear why it should not similarly apply to market contexts. This section will introduce some central ethical concerns raised against nudging in governmental contexts, while the following sections will then explore to which degree it may be justified to ignore them in market contexts.

Perhaps the most fundamental reason for concern against nudging, is that nudges tend to operate without the full understanding or even conscious awareness of decision makers (Binder, 2014; Thaler and Sunstein, 2008). Even where nudging consists only in the presentation of information, the decision maker typically has no control over which information is presented, or knowledge about which alternative information could have been presented. This raises the fundamental question how 'nudging' differs from the less positively connoted term 'manipulation'. Susser et al., (2019) define manipulation precisely as "*imposing a hidden or covert influence on another person's decision-making"*. Manipulation (and arguably nudging) is thus ethically problematic because it can undermine individual autonomy, i.e. our ability to be the authors of our own decisions (Rudinow, 1978). An infringement of individual autonomy, meanwhile, is widely viewed as an in infringement of human dignity itself (Malpas and Lickiss, 2007).

Proponents of libertarian paternalism acknowledge this concern, but respond to it in two ways. Firstly, they emphasize that there are no neutral choice architectures, i.e. it is impossible to avoid nudging (Thaler and Sunstein, 2008). It thus seems sensible to design the choice architecture according to our ethical standards as best we can. Simply ignoring the role of choice architectures will not eliminate their effects, though it may blind us to them. Secondly, libertarian paternalists add a meta-libertarianism, i.e. they argue that individuals should *judge the nudges*. This is captured in the phrase that nudging should make individuals better off '*as judged by themselves*' (Thaler and Sunstein, 2008). For instance, a choice architect may simply ask individuals if they approve of a nudge towards healthier food choices (Van Gestel et al., 2018). Another way to say

this is that libertarian paternalism must aid individuals in making the decisions they 'really want' (Sugden, 2017). We will refer to nudges and choice architectures which accomplish this as 'beneficent'. Without the assumption of beneficence, thus defined[3], libertarian paternalism is simply the systematic manipulation of individuals towards a paternalist's end. In other words, if a 'paternalist' cannot (or does not) ascertain if individuals 'really want' to be nudged in every single case, then he inevitably undermines autonomy to some degree.

This leads us directly to a second major concern: Critics of libertarian paternalism question in principle if governments can know (or are interested in) what individuals *really want* (Hausman and Welch, 2010; Rizzo and Whitman, 2021; Sugden, 2017). Firstly, individuals within governments are riddled with incentive conflicts and may simply pursue their own ends (Munger and Villarreal-Diaz, 2019). Secondly, many economists are deeply critical of the idea that governments can assess what their citizens want even remotely as well as the market mechanism (Hayek, 1945; Rizzo and Whitman, 2021). Sugden (2017) illustrates this point with the above mentioned question if 'people really want to be nudged towards healthy lifestyles'. How should a government know, in any single case, that a choice for an unhealthy food option is not genuinely what an individual wants in that specific situation? In fact, Sugden's point questions the notion of 'beneficence' as defined above more generally: It is in some sense fundamentally impossible to determine what individuals 'really want'. If we distrust a person's *actions* as revealing their preferences, Sugden argues, then we must certainly also distrust their *claims* about those preferences. All of this is of course again compounded by the fact that, in practice, individuals will often not even be aware that they are being nudged in the first place (Binder, 2014). They will thus effectively often not have the opportunity to 'judge by themselves' (Thaler and Sunstein, 2008).

The in our view most important concern has been voiced by Binder (2014) in the context of 'preference learning'. He argues that "libertarian paternalism's manipulative shaping of preferences might lock-in individuals into heteronomous preference learning paths without individuals being even aware of it". The key concept in this statement is that of a 'preference learning path'. It captures yet another empirical violation of standard economic assumptions, namely that preferences, i.e. what 'people really want', are not fixed but can be learned (Ashton and Franklin, 2022; Dold and Schubert, 2018; Witt, 2001, 2012). Binder warns that paternalistic nudging could manipulate *preferences themselves*, without our conscious awareness and undermining our say in the matter. Why this is potentially so consequential is captured by the innocuous word 'path'. It recognizes that preferences learned at one point in life can affect the learning of preferences into the indefinite future, such that even minor nudges can shape the

[3] We will use the term beneficence strictly in the libertarian paternalist sense, i.e. as aiding an individual achieve their own 'real' goals, notwithstanding the clear problems with this definition (Sugden, 2017). It would e.g. not be beneficent, if an individual is nudged towards a healthy lifestyle, which it does not 'really want'.

unfolding of entire 'preference learning paths' (Schubert and Cordes, 2013; Witt, 2001). Manipulations, e.g. in childhood, can thus affect how our preferences develop over the entire courses of our adult lives, in a way that we did not consciously choose.

Binder's concern is so significant, because it again touches on key aspects of human dignity and identity. According to Dold and Schubert, (2018) the conscious and autonomous development of our own preferences is a central part of how we create and shape our very identity as human individuals (Davis et al., 2016; Dold and Schubert, 2018). The prospect of a government undermining our autonomy to shape our own identity, is indeed troubling, and may be seen as a clear challenge to human dignity (Malpas and Lickiss, 2007).

Given these valid concerns, critics strongly caution against the systematic use of libertarian paternalism by governments. Importantly, given the generality of the arguments, the use of government nudges is viewed critically *per se*. Interestingly however, all of these criticisms almost completely omit the issue of nudging in markets, which appear to be viewed as unproblematic *per se*, or at least to not merit more than a brief mention (see e.g. Hausman and Welch, 2010). Next we explore the reasons for this asymmetry and its potential justifications.

2.2 Obstacles to examining market nudging

Why is MN held to a dramatically different standard than government nudging? This question merits particular attention, because market nudges are potentially far more pervasive and consequential than government nudges.

The reasons for the differential scrutiny of market vs governmental nudges can be separated into at least two broad categories. Firstly, there are fundamental epistemic and conceptual difficulties that are specific to the market case. These make it more difficult to identify MN as well as to conceptualize their system-level effects. Secondly, there are explicit arguments suggesting MN is less problematic than government nudging. These range from an assumed protective effect of market competition to the argument that market nudges will cancel each other out. In addition to these two categories, there appears to be a frequently noted general hesitance of economist to engage with concepts which are not felt to be "constructive" with respect to the consumerist claim (Akerlof and Shiller, 2015; Hanson and Kysar, 1999; Hodgson, 2003). In this section we will first outline a central epistemic difficulty specific to the consideration of MN. We then critically explore the theoretical argument that MN can generally be assumed to be beneficent due to market competition. These considerations will show how the epistemic difficulties in both respects can be used to downplay the role of MN for anyone with a strong prior belief in the consumerist claim.

A fundamental difficulty in assessing the prevalence and role of MNs is that they are typically not advertised as such. Marketers and corporate actors may be discrete about their nudging practices simply to protect a competitive advantage, but perhaps also to prevent public backlash (Luguri and Strahilevitz, 2021). Indeed, Nadler and McGuigan, (2018) have recently observed that marketers simultaneously emphasize their abilities to exploit behavioral biases towards clients, but reject such practices in public. This implies that the prevalence of MNs has to be assessed without relying on explicit declarations by choice architects, who may indeed vehemently deny relying on such practices. This simple fact may be one of the main reasons that literature critical of MNs has tended to focus on *clearly* welfare-undermining or deceptive instances. Given that the creators of MN are likely to deny the use of nudging outright, it is easy to dispute that an MN exists at all, unless the behavioral effect is unambiguously against the interests of the consumer.

To build intuition on how difficult it can be to assess a more typical MN, consider the placement of sweets at a checkout counter (Van Gestel et al., 2018). This example almost directly mirrors the standard libertarian paternalist example of healthy food placement in a cafeteria (Thaler and Sunstein, 2008). However, instead of theoretically deliberating which placements would be desirable, we are faced with an actual pervasive pattern of placements, and have to infer if it is a nudge. We argue that such an inference is reasonable if the product placement can i) be mapped to known biases which could ii) be effectively harnessed to increase sales. This is indeed the case: The placement of sweets at the checkout may systematically increase the probability of impulsive purchases (Hollands et al., 2017; Iyer et al., 2020). Products, that are inherently more likely to induce impulsive behavior (e.g. unhealthy vs. healthy foods) likely increase overall consumption. Furthermore, a prominent placement at a site all customers must pass maximizes availability and proximity (Hollands et al., 2017), again potentially allowing increased sales. Finally, the placement at the check-out may also draw on ego-depletion (Iyer et al., 2020) and speedy lock-in (i.e. the difficulty to reconsider an impulsive choice after paying, Van Gestel et al., 2018).

Taken together with the observation that it is simply in a supermarket managers rational interest to harness behavioral biases, if this can increase sales and profit (Akerlof and Shiller, 2015; Hanson and Kysar, 1999), we obtain a strong case for an MN. Indeed, Akerlof and Shiller (2015) explicitly argue that the very forces of market competition are likely to maximize nudging (or 'phishing' as they term it). However, this remains an indirect inference, and without an explicit declaration of 'intent to nudge' by the supermarket, we cannot know for certain if this is a nudge. It thus remains possible for anyone with a strong prior conviction that MNs are irrelevant to doubt that this is an instance at all.

Importantly, if we accept that this pattern reflects a nudge, then this implies that revealed preferences in this context give no clear indication of what 'people really want' (Sugden, 2017). The act of consumption no longer reveals a preference but instead (in part) a market-derived nudge. And yet the very argument made by Sugden, (2017) and colleagues now serves as a second

line of defense against potential critics of MN. Specifically, since we do not know what the consumer really wants, it is always possible to simply assume that the nudge had no practical effect, i.e. that the consumer would have chosen to consume even without it.

Next we might ask if such a nudge can be assumed to be beneficent, i.e. if consumers would approve of it. If there are good theoretical grounds for a general assumption that MNs are beneficent, then this would surely warrant them being exempted from broad criticism. One argument to support this view is that consumers who are nudged in ways they do not approve of will switch to a competitor in the long term. For instance, Dowling et al. (2019) argue that "taking advantage of behavioral biases for profit-maximizing may backfire due to consumers' fairness concerns". Accordingly, beneficence would coincide with long-term profitability and be naturally optimized in the market. However, as the authors themselves acknowledge, potential consumer backlash could only be expected "*if* consumers become aware' of such practices" (ibid., emphasis added). But the fact that the effects of behavioral interventions are often not consciously perceived by decision makers is one of their hallmark features. Even if nudges are in plain sight (consider 99 cent prices), consumers may not consciously perceive the effect this has on their decision making. This argument thus seems quite incoherent as support for general beneficence of MNs.[4] In fact, recent evidence bears out that while backlashes can occur in excessive cases, milder or more sophisticated forms of manipulation are highly effective (Luguri and Strahilevitz, 2021; Zhuang et al., 2018).

A related argument, suggests that firms will generally nudge beneficently, because non-beneficent nudging will trigger regulatory backlash, again undermining long-term profitability (Dowling et al., 2019). However, this is similarly not really an argument for beneficence but rather an argument outlining possible limits to excessive exploitation. While excessively manipulative or welfare undermining practices do frequently meet regulatory responses (Akerlof and Shiller, 2015), this is linked to a number of significant constraints. For instance, it may be more profitable for a company to mitigate regulatory backlash via lobbying (Munger and Villarreal-Diaz, 2019) or by systematically fostering false consumer beliefs (Conway and Oreskes, 2011). Below (section 4.2) we will see that such practices are indeed pervasive and potentially highly consequential. Regardless, basing the very strong assumption that MN is necessarily mostly beneficent on these arguments seems highly questionable.

These considerations illustrate the fundamental epistemic difficulties in assessing both the prevalence and beneficence of MP. Specifically, i) corporations will often not declare nudges as

[4] There are numerous additional problems with this argument, the deliberation of which is beyond the scope of this manuscript. For instance i) firms don't necessarily think in the long term but often optimize quarterly profits, ii) many market interactions are single interactions not allowing for consumer backlash to affect profitability, iii) consumers may habituate to nudges or accept them as socially normative (consider 99 cent prices), or iv) nudges may adversely affect third parties or future generations (this is often termed externality).

such and ii) it is difficult to know what consumers really want. It is interesting to note that the second obstacle is routinely used both to criticize governmental nudging and to defend market nudging (see. e.g. Binder, 2014; Sugden, 2017). Sugden (2017) for instance rejects government paternalism on the grounds that governments could not possible know that individuals 'really want' to be nudged towards e.g. healthy lifestyles. At the same time apparent market nudges towards unhealthy diets are defended on the grounds that individuals perhaps 'really want' to eat unhealthily. All that is required for this to be possible is the first obstacle, i.e. the fact that market participants do not declare their nudges. As long as the nudge is not declared, MN can variably be claimed to i) not exist, ii) have no relevant effect, or iii) simply aid individuals in making the decisions they 'really want', all of which is routinely done.

Such difficulties are significant obstacles to a rigorous empirical assessment and help explain why the literature on MNs remains a fragmented and controversial side-note to mainstream economics. It also explains why evidence of welfare-undermining MNs will remain inconclusive for anyone with a strong prior belief in the consumerist claim: Even the most extremely welfare undermining behaviors can be interpreted as reflecting what consumers 'really want' by simply positing it as their rational preference (Hodgson, 2003). For instance, Becker and Murphy, (1988) have, in this spirit, examined 'rational addiction', claiming that addicts maximize their genuine preferences throughout. This may be an extreme case, however the general dedication of mainstream economics to the consumerist claim has been emphasized over and over again (Akerlof and Shiller, 2015; Dold and Schubert, 2018; Hanson and Kysar, 1999; Hodgson, 2003; Thaler, 2018a). In the words of Hanson and Kysar, (1999), the "reluctance of earlier scholars to acknowledge this possibility of manipulation appears to stem from their allegiance to the classical model and desire to remain constructive with respect to it". This appears to remain as true today as it was in 1999. Given the epistemic difficulties, there is perhaps no hope to convince a dedicated believer in the consumerist claim, that MN are relevant at all.

2.3 A review of market nudging and empirical evidence

Above, we have explored some fundamental obstacles to the investigation of MNs, and how these obstacles support the mainstream position that MNs are generally unproblematic and perhaps even beneficent. In this section we will review previous accounts critical of MNs, and the substantial, if fragmented, evidence they have aggregated. In documenting countless cases of MN that are quite clearly welfare undermining or deceptive, this literature directly disproves claims that MNs can safely be assumed to be unproblematic. However, it is worth reemphasizing that the MNs described in this literature likely only present a tiny fraction of MNs overall. Specifically, any MN which is not clearly identifiable as either welfare undermining or deceptive, tends to be excluded from the very definitions of the concepts that follow below, namely 'market manipulation' (Hanson and Kysar, 1998), 'phishing for phools' (Akerlof and Shiller, 2015), 'sludge' (Thaler, 2018b) and 'dark patterns' (Luguri and Strahilevitz, 2021; Mathur et al., 2019).

Market manipulation: More than two decades ago, Hanson and Kysar, (1999, 1998) first aggregated evidence of what they termed "market manipulation". The authors identify market manipulation as the harnessing of behavioral biases for profit, and analyze the issue from a legal and ethical perspective. Notably, the authors already emphasized that such 'market manipulation' simply reflects the rational response of a market actor to the existence of behavioral biases in consumers. The specific question of Hanson and Kysar's treatment is if a corporation which has manipulated a consumer into a risky behavior should be held liable for an ensuing harm. They then go on to aggregate substantial evidence of such manipulation concerning "food products, pharmaceutical drugs, environmental pollutants, weapons, and automobiles" and most significantly tobacco consumption. To name just one particularly appalling example: Producers of milk powder relied on aggressive deceptive marketing in developing nations, which was found to have significantly increased infant mortality by systematically misleading mothers about the relative risks of breast feeding versus its commercial alternative. Overall, Hanson and Kysar rely mostly on case studies pertaining to particular industries or products, their aggregation was impressive and highly suggestive even in 1999. Subsequent research has only substantiated the central conclusions of specific case studies and the general argument (see e.g. Conway and Oreskes, 2011, for the case of tobacco or Kearns et al., 2019, for an analysis of a sugar industry marketing campaign). Building on Hanson and Kysar (1999, 1998), Calo (2013) noted that the "digitization of commerce dramatically alters the capacity of firms to influence consumers at a personal level". For instance, "an obese person trying to avoid snacking between meals could receive a text on his phone from the nearest donut shop *exactly when* he was least likely to resist". His predictions about online manipulation have blossomed into a lively research field under the heading of 'dark patterns', as well as the description of a new logic of 'surveillance capitalism' (both of which we briefly introduce below).

Phishing for Phools: The present account is closest in spirit to Akerlof and Shiller's (2015) seminal 'Phishing for Phools'. The authors propose the term 'phishing', to denote any market practice that capitalizes on the exploitation of knowledge gaps, behavioral biases, or other deviations from the rational model of the economic decision maker, at the detriment of a 'phool'. The term 'phool' is meant to highlight that individuals who are the targets of such practices should *not* be considered 'fools', but rather simply victims of phishing. The book outlines countless examples of MNs, which clearly undermine either the interests of consumers, or of society more generally, in the service of profits. Just like the present account Akerlof and Shiller take a broad view of such practices, observing how they include not only the direct harnessing of consumer biases, but also the concerted manipulation of government regulations, and sweeping campaigns to affect consumer perceptions and beliefs (most prominently in the context of the 2008 financial crisis and the opioid epidemic). They further emphasize, that such phishing is the result of the same equilibrium forces that underlie Smith's invisible hand. The principal differences between 'phishing' and the

present notion of MP, as mentioned above, are i) the initial normative agnosticism of MP ii) the focus on coordinated system-level consequences.

Sludge: More recently, scholars have coined the terms 'sludge' (Thaler, 2018b) and 'dark nudges' (Newall, 2019). 'Sludge' appears to be the preferred term of the inventors of nudging and libertarian paternalism (Sunstein, 2020; Thaler, 2018b). While Thaler's original introduction of the concept suggests it refers to any maleficent choice architecture, the term has more recently been restricted to refer only to cases where behavior is affected via the targeted creation of 'friction' (Mills, 2020; Sunstein, 2020). For instance, Sunstein, (2020) defines sludge as "excessive or unjustified frictions, such as paperwork burdens, that cost time or money; that may make life difficult to navigate; that may be frustrating, stigmatizing or humiliating; and that might end up depriving people of access to important goods, opportunities and services". A prominent example in a market context is when services are simple to subscribe to, but take substantial effort to cancel (e.g. gym memberships). While such sludge is convincingly argued to be ubiquitous within both governmental and market contexts, the literature appears to be limited to the listing of individual examples.

Dark patterns: Mathur et al. (2019) and Luguri and Strahilevitz (2021) investigate the prevalence and effectiveness of 'dark patterns' online. Dark patterns are defined as 'user interface design choices that benefit an online service by coercing, steering, or deceiving users into making unintended and potentially harmful decisions' (Mathur et al., 2019). Following, an in depth review of previous investigations, the authors take the approach one step further by systematically assessing the prevalence of 'dark patterns', via an automated web crawl of 11000 online shopping sites. They identify dark patterns in 11% of websites, including mostly '*deceptive*, and *information hiding'* patterns as well as many patterns that 'exploit cognitive biases, such as […] default and framing effects'. They emphasize that this represents a lower bound since only particular types of text-based patterns were scanned for. In a similar vein, Nadler and McGuigan (2018) draw attention to the increasing importance of data-driven marketing. They note that such practices allow corporations to 'identify consumers' cognitive and affective biases and target their vulnerabilities' with ever increasing precision, reviewing numerous examples. For instance, one marketing study purportedly advised that advertisements for beauty products should be targeted to women's 'prime vulnerability moments'. Nadler and McGuigan, (2018) analyze the discourse within marketing literature and conference proceedings, concluding that 'marketers themselves conceptualize the capacities of digital marketing as forms of social and behavioral control', but do not admit to this publicly.

Surveillance Capitalism: Zuboff (2019)**,** in her notable recent book, argues that the business models of large online corporations such as Google or Facebook are giving rise to a fundamentally new logic of "surveillance capitalism". She outlines how competitive market dynamics drive the increasing surveillance of individual behavior in the digital realm. The ultimate purpose of this

surveillance is of course "to nudge, coax, tune, and herd behavior toward profitable outcomes". Zuboff provides numerous examples, outlining how data scientists are increasingly mastering the "art and science of the digital nudge for the sake of their company's commercial interests". For instance, in two widely noted studies, it was demonstrated that Facebook can significantly influence behavior and emotional state, typically without the influenced person being aware (Bond et al., 2012; Kramer et al., 2014). Another noteworthy instance is Pokémon Go, a smartphone game which directs individuals through the real world, based on GPS tracking. Zuboff outlines how the game was used to "herd" individuals to specific geographic locations, such as café's or other commercial sites. While the makers of Pokémon Go initially "declined to say exactly what would be for sale", it later became clear that this 'herding' service was the actual product. Commercial destinations sites could pay the games makers in order to nudge customers their way. Crucially, the individuals so nudged were i) not coerced in any way and were ii) typically not aware of how the game guided them. Zuboff argues that Pokémon Go provided a test-run of "a global means of behavior modification owned and operated by surveillance capitalism". She emphasizes that the inherent logic of this dynamic is to promote continuously increasing surveillance and ever increasing efficiency of behavioral control (i.e. nudging), concluding that surveillance capitalism must be expected to continually and progressively erode individual autonomy. Surveillance capitalism may be seen as a manifestation of MP, which puts particular emphasis on digital mass surveillance and its ethical and political consequences.

The above evidence clearly shows that MNs i) exist and ii) are frequently non-beneficent. However, it should also be noted that with the exception of 'dark patterns' the literature remains somewhat fragmented and unsystematic, mostly based on the aggregation of case studies and examples. Many authors have emphasized that undesirable MNs are the natural consequences of economic competition (Akerlof and Shiller, 2015; Hanson and Kysar, 1999; Mayzlin et al., 2014). However, all this is still consistent with a view of isolated behavioral market failures, with no clear emergent net-effect. In particular the suggestion of Hausman and Welch, (2010), that MNs in a 'cacophony' of market interests may often 'cancel one another out' remains unaddressed.

2. From MN to market paternalism (MP)

3.1 Do market nudges cancel each other out?

Next, we will consider if MNs can plausibly be assumed to generally cancel each other out, that is if the effects of MNs can be safely assumed to be neutral in aggregate.

To build intuition, let us return to the example of the supermarket. It is plausible to assume a manager or marketing department has designed the choice architectures within the supermarket with the goal of increasing sales and profits (Dowling et al., 2019; Iyer et al., 2020). Akerlof and Shiller, (2015) argue that in what they term a 'phishing equilibrium', any supermarket that does not optimize nudging to maximize sales will not be competitive. This suggests that MNs must be

expected to arise on a significant scale, but leaves open if the nudges created by various market participants may cancel each other out.

For instance, if in equilibrium nudges are pervasive but uniform, then nudges for one product may be counterbalanced by the nudges for other products (e.g. by competitors). Specifically, if consumers are assumed to be able to efficiently control their total budgets, similar nudging for all products might lead to no net consumption changes. However, the assumption that consumers can efficiently control their budget seems no more warranted than that they are rational in general. Indeed, growing private debt (Barnes, 2016; Schularick, 2014) and personal bankruptcy rates (Osterkkamp, 2006) in many countries suggest limits to private budgetary discipline.

Other mechanisms may lead to a partial mitigation of the effects of MN, but are unlikely to eliminate it. For instance, many consumers are likely to build defenses against MNs, for instance reducing impulse purchases of sweets by committing to adhere to a shopping list. While different individuals clearly engage and succeed with such practices to varying degrees, all this will do is partially mitigate the effects of MN. Thus defense building cannot reasonably be expected to lead to complete 'canceling out'. Similarly, consumers likely sometimes habituate to MN, perhaps rendering the seductive effect colorfully wrapped sweets at the checkout less enticing over time. This also very likely occurs to some degree, depending on both the individual and the situation. However, habituation would again only lead to partial mitigation. It also remains implausible for many types of nudges. For instance, it is unclear how setting defaults, an extremely effective nudge (van Kleef et al., 2018), could be countered by a habituation effect.

Most importantly, it is unclear how or why market forces should give rise to abundant nudges which decrease consumption. It is simply not plausible that free markets would generate such nudges on the same scale as it generates nudges towards consumption. Overall, the notion that nudges by market participants with different interests will fully or mostly cancel each other out thus seems highly implausible, in particular with respect to the question of net-consumption. As we will see below, the evidence bears out this reasoning.

3.2 The natural selection of MN

But there is an even stronger reason to believe there will be an emergent net-effect of market-derived choice architectures. To see this, we must go beyond the assumption that only individual market participants design choice architectures. Instead, we propose such choice architectures must be expected to emerge from competitive market selection itself, via a cultural evolutionary dynamic (Alchian, 1950; van den Bergh and Gowdy, 2009; Braganza, 2022; Cordes, 2019; Wilson and Kirman, 2016). In a nutshell, market selection may be expected to eventually identify the optimal, i.e. most profitable, choice architecture by implementing a mechanism that supersedes the deliberations or intentions of any individual market participant. Of course there are numerous significant differences between biological and cultural evolution (Cordes, 2006). However, as we

will see, many of these mechanisms make cultural evolution more powerful and agile when compared to biological evolution. The key similarity is that the cultural evolutionary mechanism can supersede the design abilities of individuals, allowing the emergence of design without a designer.

To illustrate, imagine a set of supermarkets, each of which selects some set of product placements (i.e. a choice architecture). These product placements may reflect the best expertise of managers, but for the present argument they could also be random. Each supermarket will then find how much profit ensues. In a competitive market, any supermarket with higher profits will expand its market share. The supermarket may then grow and replace competitors, making the more profitable choice architecture more prevalent (Akerlof and Shiller, 2015; Nelson and Winter, 1982). Alternatively, any less profitable supermarket may adopt the more profitable choice architecture to avoid being outcompeted. More profitable practices will thus spread because some supermarkets go bankrupt (van den Bergh and Gowdy, 2009; Metcalfe, 2008) or because profitable practices are imitated or learned (Mesoudi and Thornton, 2018). The former mechanism is akin to the selection of businesses based on emergent group-level traits (Alchian, 1950; Hodgson and Knudsen, 2004; Smaldino, 2014). However, it is particularly the latter mechanism, in combination with individual creativity, that is thought to supercharge the speed and efficiency of cultural evolutionary processes (Cordes, 2006; Henrich, 2016; Mesoudi and Thornton, 2018). What is crucial to realize is that both cases must be expected to lead to the spread of the most profitable choice architectures. This is in essence an evolutionary version of Akerlof and Shiller's (2015) argument that competitive markets will enforce maximal 'phishing' (i.e. nudging).

The recognition of this supra-individual dynamic has two important consequences. First, it allows to abstract away from the effect of conscious design by individual market participants. Any consciously designed choice architecture, e.g. by a manager, will ultimately succeed or fail based on market selection. As long as a choice architecture works, i.e. generates higher profits, it doesn't really matter if the designer has a deep understanding of behavioral economics, or if the architecture was just stumbled upon by chance. The explanatory relevance of manager decisions is thus, in first approximation, negligible at the system level.[5] To the degree that choice architectures are actively designed, they may (in first approximation) be expected to serve the profit motive. In other words, deliberations and creativity by managers and marketing departments are likely to accelerate cultural evolution (Cordes, 2006), however approximately the same outcome would be expected if conscious designers played no role. The reason is that both the conscious (design by e.g. marketers) and the non-conscious (cultural evolution) mechanisms are directed towards the same end (success in market selection). Please note that

[5] Of course managerial decisions are highly relevant to the stakeholders of an individual firm, for which economic survival depends on it.

we do not wish to argue, that this account provides a full description of the respective phenomena - additional cultural dynamics such as corporate missions or moral considerations surely also play a role (Braganza, 2022; Mayer, 2021) – but we would argue that it is extremely dangerous to disregard the evolutionary dynamic of market selection because it sets a hard constraint on such other dynamics (Braganza, 2022).[6]

This brings us to the second, crucial consequence of recognizing the supra-individual nature of this dynamic: If market optimization is a process akin to cumulative cultural evolution (Mesoudi and Thornton, 2018), then it must be expected to have far superior computational power than any individual (Smaldino and Richerson, 2013). Indeed, by building on and coordinating the ingenuity of individuals, cumulative cultural evolution is likely to produce emergent designs and patterns beyond what any individual could ever imagine (Henrich, 2016; Mesoudi and Thornton, 2018). This is directly borne out by some of the patterns that market paternalism appears to have created, as we will see below. But in order to structure and interpret the available empirical evidence, it will be helpful to first more clearly define the emergent *end* of market paternalism. It is a clear conceptualization of this emergent end, which reveals market paternalism as a cohesive force, coordinating MNs towards a distinctive end.

In sum, we draw on the rich literature in evolutionary economics to suggest that market selection gives rise to a cultural evolutionary process (Cordes, 2019; Nelson, 2016). We add that such a process should be expected to create choice architectures which harness behavioral biases in service of profit. These choice architectures may derive from individual market participant's design and innovation, but may also appear through system-level selection. However, since individual-level design is not strictly necessary, and where present mainly supports the system level dynamic, it is most parsimonious to view market paternalism as a primarily system-level phenomenon.

3.3 MP: When MNs optimize the proxy

Above, we have motivated the idea that abstract market forces will systematically harness cognitive constraints and biases, i.e. give rise to MN. We have further argued that these market nudges will likely not cancel each other out, but must in some important respects be expected to cohere into clear systemic effects, justifying the term *market paternalism (MP)*. Next we will motivate an even stronger notion of MP, arguing that these systemic effects will behave *as if* directed towards a coherent emergent *end.* To build intuition, we have suggested the *end* of MP can be thought of as increased consumption or profit. Here, we will propose a more rigorous definition of the emergent *end* of MP. Specifically, we propose that a fitness measure describing market selection, which we have termed the *emergent market-level proxy* (Braganza, 2022)*,*

[6] For instance, individuals which choose to act in line with a moral conviction, which conflicts with market success may simply be removed from the system by selection. A supermarket, which rejects every form of nudging on moral grounds, is arguably unlikely to evolve/survive within a modern economy.

represents the organizing principle underlying MP, or the emergent *end* of an apparent *invisible paternalist*. The *emergent market-level proxy* (or more briefly 'proxy') can be defined based on fundamental information-theoretic principles from optimization and decision theory. Specifically, the proxy is defined as a ***functional scalar description*** of a ***physical selection system*** which ***approximates an abstract underlying goal***.

A decision or selection system can be *functionally described* by a *scalar measure,* if it is consistent and logically coherent (Houthakker, 1950; von Neumann and Morgenstern, 1944). The intuitive reason is that any consistent ranking between options requires a comparison on a single scale. Economists have extensively elaborated the conditions and implications of this insight based on the concept of 'utility', which provides a convenient functional description of the outcome of complex human decision processes (von Neumann and Morgenstern, 1944). In evolutionary biology, this exact same intuition underlies the concept of 'fitness', which is again a scalar measure providing a functional summary description of distributed evolutionary selection forces. Decision and selection are equivalent in the sense that a decisions reflects the selection of one out of many potential options (Skinner, 1981, refers to this fundamental analogy as 'selection by consequences'). In exactly the same sense, we suggest the emergent market-level proxy as a functional description of the factual criteria of market selection.

To build intuition, the proxy can be thought of as profitability as suggested above, since this simple metric goes a long way in describing relative success in markets. For instance, we may try to assess the increased profit due to some change in product placement or package design. However, more generally the proxy captures whatever determines competitive market outcomes in practice. Similar to fitness, one can operationally define the proxy for specific niches (Cazzolla Gatti et al., 2020), such as market segments, or with respect to particular practices or "routines" (Nelson, 2016; Nelson and Winter, 1982). Of course, there may be many random factors influencing competitive selection, just as for individual decisions or evolutionary selection. However, ultimately the selection (or decision) mechanism is relevant to precisely the degree with which it removes randomness, i.e. produces consistent decisions, and can be described by the proxy.

Why can proxies only *approximate* an underlying goal? In practice the consistency in market selection is brought about by some *physical mechanism*. This physical mechanism aggregates information and integrates it in some way in order to compute selection decisions. In the market context such a selection decision might be which retailer goes bankrupt and which grows. However, both the aggregation of input information and the computations are subject to physical and informational constraints. For instance, a retailer has direct access to the amount of sales of a certain product, but has no direct information about the actual welfare effect of those sales. This informational asymmetry propagates through the market. A retailer with lower sales will be less profitable, receiving lower investments in the capital market. Ultimately, the market selection

of retailers (or retail practices) will depend on information about sales and profitability, but not whether this profitability came about by nudging or by genuine preference satisfaction. The proxy *inherits the computational limits and idiosyncrasies of the physical mechanisms that create it*. It is this fundamental property which motivates the term 'proxy', capturing that it is inevitably an imperfect approximation of an abstract goal. In the present case, nudging partially decouples the proxy from individual preferences, and thus the goal that the consumerist claim posits the proxy to approximate.

Proponents of the consumerist claim, but also scholar more generally, posit the abstract goal of market selection to be some notion of aggregate welfare (Fellner and Goehmann, 2020; Kelly and Snower, 2021). Within the standard economic framework this is paradigmatically defined as *optimally satiating given preferences with given means* (Dold and Schubert, 2018). Numerous previous scholars noted that behavioral economics undermines this definition of welfare (Dold and Schubert, 2018; Kelly and Snower, 2021), but have hesitated to draw positive conclusions about what market selection then does optimize. The present account, and a proxy-based perspective more broadly (Braganza, 2022), suggests that it is necessary to conceptualize an emergent market-level proxy, as the practical target of optimization, and that it is key to not axiomatically conflate this proxy with its underlying goal. MN reflects a specific mechanism that leads to divergence between proxy and goal in a market context. When markets coordinatedly nudge individuals towards a proxy, which diverges from the goal of e.g. genuine preference satisfaction, then the result will appear as a form of paternalism. Conversely, the axiomatic claim that proxy and goal are identical in a market context, i.e. the consumerist claim, requires MN to be irrelevant in aggregate, explaining the widespread hesitance to acknowledge their impact (Akerlof and Shiller, 2015).

In sum, we have argued that markets should be expected to generate choice architectures which are coordinated by a higher-level market selection criterion, termed the 'emergent market-level proxy'. It is in essence a 'fitness' measure of market selection. The term proxy is intended to focus theoretical and empirical inquiry onto the discrepancies between the proxy and the abstract goal, i.e. the quality of *approximation*. At the same time, distinguishing the proxy as a concept separate from the presumed goal of the market, allows to posit it as the *end* of MP. It is an emergent organizing principle which captures how MN will be coordinated at the system level. Given that market selection is largely based on profit and profit can often be increased by nudges towards consumption, MP is a natural consequence of competition in free markets.

3.4 MP as a supercomputer

The above cultural evolutionary account of market selection suggests that markets act as a distributed algorithm to optimize the *emergent market-level proxy*. Why does this matter?

It is broadly accepted within economics and beyond, that a distributed market mechanism unfolds computational power that far exceeds what could be expected of any individual or government (Hayek, 1945; Mirowski and Nik-Khah, 2017). Recognizing that MN is created by precisely this algorithm (in addition to individual ingenuity) thus matters profoundly. Indeed, perhaps the most celebrated property of markets is their ability to foster and coordinate creativity on unprecedented scales (Metcalfe, 2008). In particular, evolutionary economics, or cultural evolution theory more generally, emphasize the potential of cumulative processes or 'ratchet effects' (Cordes, 2019; Mesoudi and Thornton, 2018). Such ratchet effects are the reason why evolutionary processes are able to give rise to extreme sophistication over time and e.g. are thought to underlie much of technological progress (Cordes, 2019; Henrich, 2016). Smaldino and Richerson, (2013) highlight that the cultural evolutionary process driving such ratchets can be understood as a form of 'distributed computation', with exceptional computational power. Within the standard economic framework, i.e. according to the consumerist claim (Fellner and Goehmann, 2020), this simply makes markets converge on the welfare-optimal equilibrium. Any innovation that increases consumption, created in (or by) a market, can by definition only be welfare enhancing.

However, if we accept market selection as being based on the emergent market-level proxy, then creativity will be directed at whatever maximizes this proxy. This point is reminiscent of the fundamental point made at the outset by Akerlof and Shiller, namely that nudging is unavoidable in market equilibrium, since any non-nudging corporation will be at a competitive disadvantage. However, the evolutionary economic perspective adds a subtle yet immensely consequential twist to this insight. It concerns the realization, that *innovation is cumulative and open ended.* This recasts what previous accounts might have conceptualized as well circumscribed 'market failures' as a process of open-ended progress, which gives rise to ever more sophisticated and powerful nudges. To illustrate this point, we will now explore a particularly remarkable example of how the market algorithm appears to have innovated an obesogenic (i.e. obesity inducing) nudge, which draws on biochemical knowledge that could not possibly have been known to anyone designing it. Another prominent example, which we have touched upon above, are digital nudges with remarkable (and increasing) sophistication and scale (Calo, 2013; Mathur et al., 2019; Zuboff, 2019; see section 2.3).

Highly-processed foods are well known to elicit supernormal appetitive effects, likely in part because they are extremely dense in calories (Veldhuizen et al., 2017). This can arguably already be understood as a nudge (i.e. the harnessing of a behavioral bias or evolutionary mismatch, Burnham, 2016, see section 5.1). Remarkably however, it has recently been shown that they induce increased consumption, even if diets are calorie matched (Hall et al., 2019). How, might this behavioral effect be achieved? Several recent studies, are beginning to uncover the complex metabolic mechanisms, by which such foods increase the "reinforcement potency" of consumption (DiFeliceantonio et al., 2018; Veldhuizen et al., 2017). One apparent mechanism

appears to be a seemingly targeted compromising of gut-brain signaling, in order to increase appetitive behavior (Small and DiFeliceantonio, 2019).

We highlight this example because it is inconceivable, that anyone could have designed such an influence strategy. The designers of these foods could not possibly have known about the details of gut-brain signaling and which food processing pipelines might compromise it in such a way as to increase appetitive behavior. Instead, the strategy can be attributed to the cumulative-evolution algorithm engendered in market selection: markets (i.e. market participants) simply created a great variety of foods and processing pipelines, and whichever led to the highest sales and consumption were selected. Producers then varied the most successful foods further, perhaps tinkering with design, perhaps simply due to random events in supply chains etc., iteratively determining precisely which combination of nutrients or processing procedures led to the highest consumption. Cultural evolutionary theory readily explains how such a process of trial and error is capable of creating remarkable sophistication, and can search the available strategy space to optimize the proxy similar to an extremely powerful algorithm. Crucially, this algorithm is indifferent to *why* consumption is increased, i.e. if some genuine preference is better satisfied or if a novel 'nudge' has been found. Given that the overwhelming majority of the over 26000 distinct biochemical components in our diets remain almost completely unexplored with respect to their effects on behavior and health (Barabási et al., 2019), it is difficult to see why examples such as that outlined above should not be far more common. Indeed, it is difficult to conceive of a mechanism that would be better suited than a distributed market algorithm, to optimally search for opportunities to harness the biochemical complexities or our bodies in order to systematically affect behavior.

Let us now consider the remarkable scope and sophistication of the mechanisms needed to create and maintain an obesogenic influence strategy, such as disrupting gut brain signaling via specific food processing pipelines. Consider the degree of coordination between the numerous raw material producers, industrial food processing plants and manufacturers required to create highly processed foods. This coordination must have arisen through constant feedback from retailers and likely in concert with advertisers and marketers. This again illustrates how the computational and coordination abilities of the market supersede those of any individual. While such remarkable emergent coordination and computational power is readily acknowledged in market contexts in general (Hayek, 1945; Metcalfe, 2008), it seems to be mostly overlooked with respect to the present question of MN (but see e.g. Zuboff, 2019). More fundamentally, market-optimization tends to be viewed as an open ended generator of progress along one dimension (innovating products that increase consumption because they satiate preferences) but *not* other dimensions (innovating strategies to increase consumption via nudging or other behavioral influence strategies). Below we will see, that this omission becomes even more problematic when preferences are not assumed to be fixed and given, but may be modifiable by MP.

In sum, we have argued that market selection implements a cultural evolution dynamic, which can be viewed as an immensely powerful, distributed algorithm. The emergent market-level proxy is the objective function that this algorithm optimizes. It is precisely because this algorithm has no direct access to information about why consumption is increased, that it will entail systematic nudging, and that the proxy may diverge from the broader societal goal it is intended to approximate. Understanding markets as a cumulative evolution algorithm, implies that MP must be expected to have i) extreme computational power, can ii) give rise to exquisitely designed nudges without a designer and that iii) this process drives open-ended innovation.

We will end this section with a thought experiment form optimization research: Nick Bostrom's famous 'paperclip factory' (Bostrom, 2014). Bostrom considers the dangers of creating an extremely powerful artificial intelligence (AI). He argues that such a 'superintelligence' would be immensely effective in the pursuit of its objective, whatever this objective is. Assume, the first creators of such an AI happened to be the owners of a paperclip factory, who programmed the objective of maximizing paperclip output. In this case, Bostrom argues, the AI must be expected to progressively recruit more and more resources, in order to perpetually increase its output, eventually enslaving humanity and turning the whole world into a gigantic paperclip factory. The question this raises in the present context is of course if the market algorithm in some sense already represents such a 'superintelligence', which relentlessly optimizes the emergent market-level proxy irrespective of human needs, ecological capacity or related moral quandaries. As we will see below, the evidence suggest this notion cannot be dismissed out of hand (see section 5 and in particular section 5.3).

4 Extended MP – non-typical nudges at individual and systemic scales

We have introduced the concept of MP as a behavioral economic concept, where it is conceived of as the systematic nudging of individual consumers towards consumption. However, the example of obesogenic nudging outlined above already showed that MP need not rely solely on nudging in the narrow, behavioral economic sense. Recall, that in this case the behavioral influence was achieved via a direct intervention in hormonal signaling mechanisms, hardly a conventional nudge. The fact that this intervention was clearly not devised by any individual, or indeed is fully understood by anyone, does not undermine its effectiveness at influencing behavior.

In the following we will explore other strategies, that might not typically be understood as nudges, but that we will nevertheless subsume under this term, since they influence behavior in ways beyond individual awareness, understanding and control. We will again maintain that it is most useful to understand these strategies as normatively agnostic *per se*, i.e. to avoid the question if consumers 'want' to be nudged (Sugden, 2017). Instead the focus should for now remain on i) the

systemic consequences and ii) the more fundamental question of autonomy emphasized for instance by (Binder, 2014).

4.1 Preference nudges - creating desires

Beside the assumption of rationality, another fundamental assumption within the standard economic framework , is that preferences are fixed (Dold and Schubert, 2018). However as Hodgson (2003) points out, a preference function that is 'already there, ready to deal with unpredictable and unknowable circumstances' seems miraculous. Indeed, an empirically and biologically informed perspective suggests that preferences are not given and fixed, but instead are in large part learned and shaped by social context over the entire course of our lives (Henrich, 2016; Kapeller et al., 2013; Witt, 2012). More specifically, it is useful to subdivide preferences into innate 'needs' and learned 'wants' (Witt, 2012). 'Needs' reflect biological necessities, such as sufficient calories, water and shelter. Innate needs can indeed reasonably be assumed to be given. By contrast, 'wants' are in large part learned in a cultural and social context. While they build on innate biological needs, their expression is highly malleable (Witt, 2001, 2012). Such learned wants may include preferences for particular foods or brands and countless other things or product dimensions (Kapeller et al., 2013). The pressing question thus arises if MP may guide preference learning in a similar way as it guides behavior. Indeed, some argue that 'creating wants and desires' is precisely what much or marketing and advertising is designed to do (e.g. Hodgson, 2003; Rokka, 2021). Moreover, as Ashton and Franklin (2022) have recently pointed out, if we take the biology and psychology of preferences seriously, then any intervention that changes behavior must be expected to also affect preferences to some degree.

As above, it is illuminating to return to the concerns raised against government nudging. Binder (2014) warns that "libertarian paternalism's manipulative shaping of preferences might lock-in individuals into heteronomous preference learning paths without individuals being even aware of it". Binder's concern is worth pausing over, as it highlights two profound issues. The first is made quite explicit, and echoes the concerns raised against nudging in general, namely that "manipulative shaping" is likely to in large part happen beyond our conscious awareness, thus undermining our autonomy. The second issue may be more easily overlooked. Binder uses the term 'heteronomous preference learning *paths'* (emphasis added), highlighting that external manipulation may not just determine current preferences, but may also determine future preference learning. It is this potential to 'lock-in' into a long term development path, without an individual even being aware of it, which is particularly troubling. While Binder thus strongly cautions against nudging by governments, he appears quite sanguine about similar practices by market participants, even though he appears aware that market nudging can engender just such manipulative shaping of preference learning paths.

Several economists have proposed models of precisely such a process, where individuals learn to prefer status-based consumption, to the ultimate detriment of their own wellbeing (Binswanger, 2006; Schubert and Cordes, 2013). Within such status-based consumption treadmills, individuals learn to respond to their 'need' for status through 'wants' for conspicuous consumption (Veblen, 1899). However, since status goods provide value only relative to an individual's peers goods, their consumption creates a negative externality on one's peers (Frank, 2011), in such a way that increasing aggregate consumption necessarily leaves aggregate welfare unaffected. Robert Frank (2011) has argued that this is indeed a natural development in any case where consumption utility is relative, such as for conspicuous consumption (Frank, 2011). Frank's arguments are convincing, and surely play a central role. However, the key point here is that such treadmills quite clearly serve the proxy, i.e. the *end* of MP. MP must thus be expected to foster such consumption treadmills by any means possible. Any corporate nudge that furthers consumption treadmills may have profound economic benefits, implying a strong selection pressure for corporations to maximize the efficiency of nudges towards conspicuous-consumption treadmills. Indeed, such consumption treadmills seem ideally suited to foster perpetual growth of the proxy.

So are there plausible reasons to believe that markets do indeed systematically guide preference learning similar to more clearly behavioral nudges? First, we can note that marketers quite explicitly conceive of their trade as "propagating consumption ideologies and desires", which seems to loosely translate to creating preferences (Rokka, 2021). Moreover, many marketers explicitly strive to influence consumer's habit formation (Nadler and McGuigan, 2018; Tadajewski, 2019). Yet such externally guided habit formation might be considered as an archetype of a "heteronomous preference learning path" as cautioned against by (Binder, 2014).[7] Indeed, a less positive and more concise formulation of 'externally guided habit formation' would be 'conditioning', a practice that some marketers similarly openly advertise (Nadler and McGuigan, 2018).

In the same vein, Ploug and Holm (2013) identify pharmaceutical to-consumer-advertising as a form of "conditioning", attained via belief shaping nudges. This example highlights that market's "manipulative shaping of preference learning paths" often appear in precisely those situations in which they can be most effective, namely when consumers have difficulties accurately assessing all relevant information. An even more salient example is marketing to children, which is closely linked to childhood obesity (Cairns et al., 2013; Moodie et al., 2006), and can shape food preferences throughout life. In a much cited article, Sandra L. Calvert states unambiguously that "children live and grow up in a highly sophisticated marketing environment that influences their preferences and behaviors" (Calvert, 2008). A final, particularly appalling example worth mentioning is the highly profitable marketing of tobacco to children (Difranza et al., 1991). Again,

[7] It may be debated if habit formation reflects preference learning or behavioral learning. The difficulty to disentangle the two again reflects the deeper philosophical difficulties in defining 'true preferences'.

this exceedingly brief review of the literature strongly suggests that many practices emergent in a market are designed precisely to influence preference learning paths. Given that this is what would be expected, it is puzzling that it has had so little impact on the standard economic outlook in general, and critical appraisals of nudging such as that of (Binder, 2014).

Dold and Schubert (2018), raise the problem to a still higher level of relevance, by arguing that the process by which we deliberate our own preferences and values is closely linked to our developing our very identity as individuals. In other words, they argue that our preferences determine who we are, or more precisely that the conscious process of deliberating our own preferences is central to deciding who we want to become. If market forces do indeed systematically and subconsciously affect preference formation, then based on Dold and Schubert's reasoning they would have to be seen as manipulating and guiding the formation of our very identity. Indeed, marketing scholars quite explicitly discuss "the power of brands as symbols that carry socially resonant cultural ingredients, including building blocks for consumers' identity construction" (Rokka, 2021). Such literature in what has become known as 'consumer culture theory' (Arnould and Thompson, 2005) generally doesn't cast the active role in guiding preference-learning and identity construction as problematic, but instead simply investigates the emergent cultural dynamics in an admirably neutral way. However, in the present context such research inevitably raises the question to which degree market paternalism may guide our individual and cultural identities in ways that are i) beyond our conscious awareness, and ii) independent of our best interest.

In summary, a biologically and psychologically informed perspective on human preferences suggests that preferences are not given, but can be shaped. This means that MP must be expected to serve its 'goal' of increasing the proxy by nudging individuals into new preferences and preference learning paths. Indeed, such nudges may be highly efficient ways to increase the proxy, as they may foster consumption treadmills allowing sustained proxy growth, even in the face of satiated human 'needs' (Witt, 2001). Moreover, well-known marketing strategies, such as pervasive marketing to children, seem quite explicitly targeted at establishing preferences, or even manipulating preference learning paths. In all these cases, the question if people (or children) really want to be nudged in such ways must be asked.

4.2 Systemic nudges – planned obsolescence, systemic obfuscation, and consumerism

The phenomena discussed above have shown how marketing or more generally market practices can systematically harness cognitive biases and limitations, or preference learning, in the optimization of the proxy. While traditional nudges can be largely understood by considering individual decision making, other practices such as promoting preference learning can really only

be satisfactorily understood at the social level (Dold and Schubert, 2018; Hodgson, 2003). Importantly, there is absolutely no reason why the distributed algorithm of MP should be restricted to individual-level nudging. Instead, it should be expected to systematically harness whatever allows the optimization of the proxy, i.e. whatever allows a corporation to succeed in market selection. In the following, we will discuss three such systemic phenomena, namely i) **planned obsolescence**, ii) **systemic obfuscation** and iii) **consumerism.**

Given that each of these practices harness cultural or economic patterns in order to nudge individuals towards consumption, we will term them *systemic nudges*. As we will see, many systemic nudges may not only allow individual corporations to increase their sales and profitability, but also entail 'positive externalities', i.e. allow to increased sales for competitors. We mention this, because it is important to recognize that creating such positive externalities does not necessarily imply that the practice entails a competitive disadvantage, i.e. practices entailing such externalities can still be selected in proxy-based optimization.

Before we proceed, it should also be noted that each of three patterns below may be viewed as controversial by some. However, it is important to recognize, that the propositions made are empirically testable. While we can support our arguments with some empirical evidence in each case, the main goal here is to convey that such systemic nudging patterns are to be expected under proxy-based optimization and MP. However, to establish to which degree each pattern is actually relevant clearly requires more research, both in terms of synthesizing existing literature and conducting prospective empirical research.

Planned obsolescence

Planned obsolescence is most commonly understood as *the artificial shortening of a product's life time;* for instance when products are "made to break" (Slade, 2007), or when they are made obsolete by other means (Longmuss and Poppe, 2017). The term was popularized by Bernard London (1932), who proposed it as a governmental strategy to boost consumption in order to battle rampant unemployment during the great depression. London was baffled at the fact that "millions were suffering amidst glutted markets and surpluses". His solution was simple: Governments should mandate the "planned obsolescence" of consumption goods. As a consequence new products could "constantly […] pour[…] forth from the factories and marketplaces, to take the place of the obsolete", such that total consumption and with it employment could again rise.

Today, planned obsolescence is receiving renewed interest in light of multiple coinciding environmental crises (Satyro et al., 2018; Slade, 2007). However, it is typically taken to arise not through paternalistic government interventions, as proposed by London, but as arising naturally within markets. From a standard economic perspective this is somewhat puzzling, as rational well-informed consumers in competitive markets should leave no room for such a practice. The most

influential economic treatments of planned obsolescence construe it as arising due to imperfect competition (Bulow, 1986; Iizuka, 2007; Waldman, 1993), where e.g. monopolists abuse their power to force consumers to frequent repeat purchases. More recent treatments have also explored how planned obsolescence could arise in competitive markets, e.g. due to poorly informed consumers (Grout and Park, 2005), or bounded rationality (Brouillat, 2015).

Here, we build on these latter treatments and propose that planned obsolescence can also be understood as a form of nudging. Specifically, we argue that planned obsolescence increases consumption by specifically capitalizing on behavioral biases and idiosyncrasies. To see why, we must first distinguish two major forms of planned obsolescence, 'absolute' and 'relative' (Longmuss and Poppe, 2017). We will treat each in turn.

Absolute obsolescence, reflects the most common understanding of the term, i.e. when things are "made to break" (Slade, 2007). It arguably reflects a form of nudging, because it harnesses the inability of consumers to precisely estimate, or adequately consider, a products prospective lifespan at the time of purchase. It is, for instance, well-known that future value is subject to hyperbolic discounting, leading to a significant 'present-bias' (Jones and Rachlin, 2009). Consumers are thus likely to inadequately consider the eventual need to repurchase a product, instead relying on immediately salient features such as price (Brouillat, 2015). A producer may thus be able to capture market share by making products that break fast, even if they are only marginally cheaper than a competitor's products. This will increase profitability if the savings of making products that need not be durable are greater than the required price decrease to capture market share. As long as consumers are sufficiently poorly informed about, or distracted from, product durability, it will play a negligible role during purchasing decisions, and thus entail no competitive disadvantage for producers. Indeed, if the consumer is again 'irrationally' guided by the lower price at repurchase, then corporation will additionally benefit from the increased purchasing rate. Note that corporations engaging in such practices may incur 'positive externalities' on each other, since the benefits due to increased total consumption rates may not all accrue to the corporation engaging in planned obsolescence.

Of course nothing above precludes the simultaneous existence of niche markets for durable products for well informed and attentive consumers (Brouillat, 2015). However, the point is that in the majority of consumption situations, durability cannot be expected to be fully and rationally considered in the decision process, because of a host of well-documented biases and cognitive idiosyncrasies. Planned obsolescence can thus be seen as systematically harnessing behavioral biases and limitations in order to increase consumption, i.e. a nudge. Notably, similar to MN in general, it is unreasonable to expect corporations to advertise their engagement in planned obsolescence (see section 2.2). The effectiveness of the strategy depends in part on consumers staying unaware of its impacts. It should thus also be expected only to the degree that it does not

elicit significant consumer backlash, i.e. to the degree that consumers stay relatively unaware or indifferent.

Relative obsolescence, describes the obsolescence of products by other means than physical faults, such as fashion or technology cycles. It is arguably substantially more important than absolute obsolescence quantitatively (Longmuss and Poppe, 2017). Rather than relying on the insufficient ability of consumers to judge product durability, relative obsolescence appears to avoid the backlash problem by creating novel desires (see section 4.1). If we accept i) that e.g. fashion systematically affects individual behavior in ways that go beyond the 'revealing' of fixed preferences and ii) corporate behavior systematically affect fashion cycles, then relative obsolescence must in part be understood as a form of nudging. However, it is important to appreciate that fashion or technology cycles go far beyond the simple creation of a choice architecture to affect an individual's behavior, or even an individual's preferences. Instead, they reflect highly complex cultural phenomena, which draw intensely on social dynamics of e.g. peer comparison (Frank, 2011). Intense marketing efforts appear to harness precisely such cultural dynamics in highly sophisticated ways, for instance by recruiting cultural role models or creating social narratives. Relative obsolescence may thus be most accurately understood as a form of *cultural nudging*. The goal of such cultural nudging seems to be to habituate consumers into the periodical renewal of consumption desires.

Interesting, planned obsolescence seems to in large part occur without anyone who actually does the planning (Longmuss and Poppe, 2017). For instance, Longmuss and Poppe (2017) report that engineers "vehemently rejected […] the allegation of a deliberately intended, premature obsolescence". However, the same engineers also emphasized that they often felt unsatisfied because "market constraints" hindered them from achieving the product quality and longevity they would like. Similarly, the manifold interactions between marketing efforts and fashion or technology cycles seem far too complex to have been explicitly planned. While highly sophisticated professionals clearly do plan marketing campaigns, there can be little doubt that these draw on a huge body of cultural information and are themselves subject to market selection. The emergence and coordination of highly sophisticated 'nudging' patterns without, or with only partial planning, is precisely what MP predicts. While it is of course difficult to assess to which degree engineers or marketers do plan obsolescence, the key point is that market forces must be expected to enforce the practice at a structural level (Akerlof and Shiller, 2015).

Finally, it should be noted, that planned obsolescence can be seen as systematically nudging consumers towards environmentally unsustainable behavior (Rivera and Lallmahomed, 2015; Satyro et al., 2018). Above, we have argued that consumers are unlikely to fully incorporate *their own future costs* of repurchase into consumption behavior. The same is true, to a dramatically larger degree, concerning environmental and social costs, which not only i) lie in the future but are also ii) uncertain and iii) typically affect primarily others. Humans discount hyperbolically

across all three dimensions (time, uncertainty and social distance, Jones and Rachlin, 2009). Consider the remarkable assumptions that have to be made within the standard economic framework for planned obsolescence not to constitute an anti-environmental nudge: Consumers would have to accurately estimate and incorporate the full costs of the environmental destruction and resource depletion caused by short product lives at the time of purchase. Planned obsolescence arguably unfolds its power *precisely because* humans cannot rationally consider these potentially immense, but extremely complex environmental implications, when purchasing the newest consumer electronic or fashion product.

In summary, planned obsolescence can in large part be understood as yet another manifestation of MP, i.e. a way to systematically nudge consumers towards increased consumption. Given that consumers are unlikely to be able to gauge the product life times and environmental costs, it should be expected to arise in unregulated markets because of, not despite of, market competition. Again, a central question should be: Do consumers really want to be nudged in this way? Would they perhaps prefer to be well informed about the prospective lifetimes of products? And would a truly rational decision not require that they are accurately informed about indirect environmental or social harms? This takes us to the next section.

Systemic obfuscation

In their seminal account "Merchants of Doubt", Conway and Oreskes, (2011) describe another systemic nudge, which influences individual behavior by drawing on the manipulation of belief formation. Specifically, they provide a detailed description of how entire industries have produced highly sophisticated marketing campaigns in order to *undermine the accurate perception, i.e. obfuscate,* adverse consequences of the consumption of their products. Such adverse consequences may include dangers to individual health (e.g. in the case of the sugar industry, Kearns et al., 2019) or more systemic effects (e.g. climate change in the case of fossil fuel industries, Conway and Oreskes, 2011). The clear goal of these campaigns is to make a majority of the public 'disbelieve the scientific conclusions' (Oreskes and Conway, 2010) in order to promote consumption. In other words, they are a predictable consequence of MP, representing yet another way to maximize the proxy.

Such 'deliberate campaigns to cloud public perception' (Kentros, 2020) reflect direct attempts to manipulate beliefs or knowledge, in order to affect decisions, i.e. they can be viewed a nudges in an informational sense (Thaler and Sunstein, 2008). However, they can also be understood as nudges in a more direct sense, because they harness a specific combination of cognitive/behavioral idiosyncrasies to achieve their behavioral effect. Specifically, these campaigns capitalize on the observation that consumers can easily be confused by emphasizing small remaining areas of doubt or highlighting conflicting evidence. In other words, they artificially increase the perceived *uncertainty* associated with adverse consequences of consumption. We have already observed that when weighing a clear immediate benefit of

consumption against uncertain, future harms to others, individuals may be generally expected to be 'irrationally' biased towards consumption. As Conway and Oreskes, (2011) document, slightly increasing the uncertainty of the harms appears to be all that is needed to ensure that they do not interfere with consumption (or indeed lead to regulation).

It should also again be emphasized that such obfuscation campaigns can only be fully understood at the systemic level, i.e. by considering cultural dynamics of how narratives and beliefs are established in society. The detailed accounts of e.g. Conway and Oreskes (2011), make exceedingly clear that systemic obfuscation is at least as much about guiding cultural dynamics, as about guiding individual behavior. Specifically, the authors investigations reveal how the creation and coordination of a complex network of think tanks, public figures and journalistic outlets, is at the very core of such campaigns (Conway and Oreskes, 2011). When designing e.g. narratives to affect consumer behavior, it is crucial to consider not only the content and psychological efficacy of the narrative to affect behavior, but also how it will propagate culturally, and can be disseminated in social and conventional media.

Finally, the case of systemic obfuscation highlights that MP acts not only on consumption decision, but also political decisions. A primary way of impact of systemic obfuscation campaigns is arguably to prevent regulatory action based on sound scientific information. The systemic effect thus arguably unfolds at multiple levels, by affecting consumer decisions, by affecting voter decisions, and directly by political lobbying (Conway and Oreskes, 2011; Munger and Villarreal-Diaz, 2019). Crucially, effects at each level may not only reinforce effects at other levels, the actions at all levels may also be expected to be efficiently coordinated towards a coherent end by MP.

In summary, systemic obfuscation can be seen as yet another cultural nudge, i.e. a broad cultural pattern driven by proxy-optimization. It is difficult to reconcile with the standard economic framework and in particular the consumerist claim. By contrast, MP predicts the necessity to undermine accurate perceptions and beliefs on a systemic scale wherever this serves the optimization of the proxy. Indeed, MP explains how entire industries can be coordinated into seemingly coherent marketing campaigns to undermine public perceptions of scientific knowledge without the need for any explicit cooperation.

Consumerism

We have repeatedly emphasized the crucial role of culture in shaping consumption decisions, and perhaps more importantly preferences. A general, if perhaps controversial, term describing cultural factors which foster consumption is 'consumerism' or 'consumer culture'. In the words of Fellner and Goehmann, (2020): 'Consumerism appears as the result of a social environment created by a societal focus on the accumulation of commodities'. As such it reflects a system of values and norms, which is culturally transmitted through e.g. social signaling and preference

learning (Schubert and Cordes, 2013). The characteristics of what has been termed 'consumer culture' are intensely researched (e.g. Steenkamp, 2019), and include a focus on the "significance of consumption in the construction of meaningful lives" (Czarnecka and Schivinski, 2019), and a "materialistic" conception of "the good life" (Fellner and Goehmann, 2020; Richins and Dawson, 1992).

Increased 'consumerism' or 'materialism' is often seen as the natural consequence of the marketing of consumption goods (Stoeckl and Luedicke, 2015). The reason is that such marketing almost inevitably fosters beliefs, values, or preferences which increase the perceived value of *material consumption*, rather than less easily monetizable aspects of life, such as social relations. Furthermore, in order to be able to purchase more consumption goods, individuals may focus more on obtaining wealth, for instance by working longer hours, or prioritizing career over family. In other words, 'consumerism' describes a broad collection of cultural dynamics, fostered by most marketing activities, which shape individual beliefs, values and preferences, in order to increase consumption behavior. Empirical investigations have indeed linked the acculturation to "consumer culture" to e.g. impulsive purchasing behavior (Czarnecka and Schivinski, 2019). More generally, variably 'materialistic' conceptions of life systematically differ across countries (Cleveland et al., 2016), clearly suggesting that they are not simply due to inter-individual variation in 'given preferences' but are subject to cultural influences.

Importantly, the observation that marketing seems to foster consumerism in no way implies that there may not also be numerous other determinants of the cultural values and beliefs in question. Indeed, cultural dynamics are notoriously complex and difficult to understand or predict, in part due to the convergence of numerous non-linear network effects in social communication. Systemic nudges, such as marketing practices that promote consumerism, may thus also act as actual 'system nudges', i.e. they may not only nudge individuals, but cultural dynamics more broadly. To which degree this occurs is an interesting, if extremely challenging, empirical question.

The present account of MP informs the consumerism perspective by outlining how proxy-based optimization should systematically support and foster consumerist values and beliefs. Specifically, it explains why myriads of market practices, by disparate market actors, across the whole globe, might be expected to align into a coherent cultural phenomenon termed "global consumer culture" (Steenkamp, 2019): Any narrative, value, belief or preference, which serves to maximize the proxy should be expected to be promoted by MP. This will occur as if by an 'invisible hand', i.e. in a highly decentralized manner, yet with extreme computational power and efficiency, and with clear net effects. Importantly, each individual instance of a market practice that fosters a 'consumerist' value or belief may benefit not only the responsible corporation but indirectly also the entire industry. This will not undermine competitivity as long as the benefits to the individual corporations are greater than those to its competitors. For instance, a corporation which manages

to foster a consumer belief that its particular brand of clothing will lead to social prestige and acceptance, may tacitly promote a general belief that branded clothing enhances social prestige. This may benefit competitors even while enhancing the market share for the original brand.

Finally, it is worth emphasizing that consumers have extremely limited control over cultural dynamics and how they are affected by them. In the words of Rokka (2021) 'consumers or marketers themselves are not particularly well equipped or able to consciously reflect on their contextual influences (which are internalized and pre-reflexive)'. Yet there is evidence that a commodity-focused or 'materialistic' outlook on life undermines wellbeing (Kasser et al., 2007; Richins and Dawson, 1992). This is in fact not surprising from the perspective of wellbeing research, which emphasizes the role of non-material values that may be crowded out by an excessively commodity focused lifestyle (Diener et al., 2018). The fundamental question that arises is thus again: Do people really want to be nudged into materialistic conceptions of "the good life" or consumerist values and beliefs more generally (Fellner and Goehmann, 2020).

5. Consequences of MP

What might the systemic consequences of MP be? We have repeatedly emphasized that MP *per se* might be regarded as a normatively neutral guiding force, i.e. it is neither inherently beneficial nor harmful. Specifically, any individual nudge should not be required to be categorized as beneficial or detrimental in order to identify it as part of MP. The reason is that fruitless debates about the normative status of individual MNs, tend to undermine, or even preempt their systematic study.

Similarly, MP at the system level may or may not be in line with what a society 'really wants'. There is perhaps nothing inherently wrong with a system that continuously nudges us towards consumption, be this via traditional behavioral nudges or by guiding preference learning and beliefs. Indeed, the field of what has been termed 'consumer culture theory' (Arnould and Thompson, 2005; Rokka, 2021) explicitly explores how the markets constant drive to create novel consumption desires can enrich our cultural lives. Consider for instance the magnificent diversity and sophistication of music, art and technology created through the constant recursive interaction of market innovation and consumer choice. It would be misguided not to recognize the central role of marketing and market nudging in these phenomena. As Witt (2001, 2012) has argued, markets allow us to continually refine our preferences, to develop sophisticated tastes in the areas of our choosing. This account deviates from the consumerist claim in a strict sense, since preferences are not taken to be given. Instead, it casts MP in the role of Sunstein and Thaler's (2003) libertarian paternalism, i.e. a system that relies on nudging, but where nudges are consistent with what people 'really want' (Sugden, 2017). Given the facts unveiled by behavioral economics, such 'libertarian market paternalism' is arguably the only viable strategy to rescue the

core of the consumerist claim, namely that we are generally justified in taking increased consumption as an indicator of increased welfare.

However, this positive account depends critically on the absence of hidden harms of the consumption inducing nudges actually arising in markets. Unfortunately, we have already mentioned numerous examples above in which the nudge consists precisely in distracting from, or denying, harms (section 4.2). We will now further explore the potential adverse systemic consequences of MP. As we will see, the evidence suggests that these may be dramatic.

Before we proceed to the individual phenomena, we want to emphasize that MP provides an account of how all these phenomena are linked. Indeed, a recurring motif in the diagnoses of scholars across disciplines is that markets in their current form are promoting a confluence of crises. For instance, Swinburn et al. (2019) argue that we are in the midst of a 'global syndemic of obesity, undernutrition and climate change'. In a similar vein, Raworth (2018) explores the intricate links between the profit motive and current financial, social and environmental crises. Finally, Kelly and Snower (2021) argue that 'rising social and environmental externalities' underlie a 'current crisis of capitalism' in which financial and social prosperity have 'decoupled'. The list of such analyses could go on, but the key point is that there is a broad perception that i) all these 'crises' are linked and ii) they are partially caused by economic activities arising in free market competition. MP offers an account of why and how all these 'crises' are linked. Specifically, it suggests that they can be understood as side effects of the efficient optimization of the emergent market-level proxy. In the following we will briefly explore some salient potential consequences of MP, namely i) increasing obesity and addiction ii) environmental destruction and iii) an apparent decoupling of economic growth and wellbeing. While it is difficult to unequivocally establish a causal link between MP and the respective phenomena in each case, we will see that such a link is often quite undisputed within the respective expert communities, even while being dismissed out of hand by economists.

5.1 Obesity and addiction

It seems clear that nudging individuals into addictive consumption patterns, such as those leading to obesity, might sometimes be an extremely efficient way to maximize the proxy. MP thus predicts unregulated markets to naturally produce such nudges whenever the benefits to proxy-optimizations outweigh the harms (for instance due to potential eventual regulatory backlash). In the following we will briefly review the case of obesity and addictive consumption patterns in general, suggesting the evidence indicates the presence of extensive and effective MN.

Obesity across the world is dramatically increasing, so much that a recent review concludes it has reached 'pandemic' levels (Blüher, 2019). The economic cost and individual health burden of the resulting diseases is staggering. Consequentially the causes and mediators of obesity are extremely well studied within a large medical and public health community. While these causes

are clearly complex, there is little serious doubt that of food marketing and food processing play central roles (Witkowski, 2007). For instance, Koch and Orazi (2017) conclude that worldwide obesity is partially driven by "marketing activities of global transnational manufacturers […], who invest considerable funds in the creation of advertising campaigns enticing consumers to eat and drink profitable, unhealthy products […] while misdirecting consumers' attention from the negative effects of said consumption behaviors". Similarly, one of the most highly cited obesity research articles claims that "strong economic forces driving consumption will inevitably lead to overconsumption and obesity", for instance due to "more persuasive and pervasive food marketing" (Swinburn et al., 2011). Some authors, analysing the many economic drivers of obesity, go so far as to denote it a "manufactured epidemic" (Stuckler et al., 2012).

One specific, much studied driver of obesity we have touched upon above are ultra-processed foods (Pagliai et al., 2021), which can be directly causally linked to obesity (Hall et al., 2019). Obesity researchers have concluded that such foods are 'engineered to have supernormal appetitive properties' (Hall, 2018), in other words they induce unnaturally strong desires to consume more.

Importantly, the mechanisms leading to obesity typically "occur in ways that defy personal insight or are below individual awareness" (Cohen, 2008). All this reveals obesogenic nudges as a clear manifestation of MP. They are patterns that arise naturally in free markets, which harness behavioural idiosyncrasies (broadly construed), to promote consumption, and they have clear systemic effects. Notwithstanding the difficulties in defining what the best interest of a consumer truly is (Sugden, 2017), it seems exceedingly unlikely that obesogenic choice architectures are premised on this best interest. While Sugden's (2017) question if "people really want to be nudged towards healthy lifestyles" is thus an interesting theoretical exercise, the practically far more relevant question seems to be if "people really want to be nudged towards unhealthy lifestyles".

More generally, obesogenic nudges can be seen as an instance of addiction inducing nudges, or what has been termed nudges towards "wicked consumption" (Koch and Orazi, 2017). Wicked consumption describes consumption patterns, which systematically undermine individual health and wellbeing and manifest at significant scales. Typical examples are soft drinks, tobacco and alcohol, all of which not coincidentally have addictive properties. It should be immediately clear that nudging individuals into such addictive consumption dynamics is an extremely efficient way to maximize the proxy, and they are thus a natural consequence of MP. Accordingly, the pervasive evidence of MN towards wicked consumption presents direct evidence of MP and its consequences.

Other instances of MN towards addictive consumption patterns, and their consequences, have been documented for instance for gambling (Newall, 2019), alcohol and tobacco (Petticrew et al.,

2020) or opioids (Hadland et al., 2019). Newall (2019) explicitly examines 'dark nudges […] designed to exploit gamblers biases'. The gambling industry has shown a remarkable ability to innovate products which exploit behavioral biases in ever increasing sophistication, particularly in online environments. To name just a few concrete examples: near-miss signals serve as a powerful psychological reinforcer that can be applied to foster gambling behavior, and have been "optimized with industrial precision" (Newall, 2019). Similarly, "Many modern gambling machines utilize losses-disguised-as-wins, where the gambler loses money overall, but nevertheless receives simultaneously-delivered audio and visual positive reinforcement indicative of a partial win" (ibid.). Petticrew et al., (2020) describes similar 'dark nudges and sludge' in alcohol marketing, and particularly perniciously, within industry corporate social responsibility material: "The approaches include social norming (telling consumers that most people are drinking) and priming drinkers by offering verbal and pictorial cues to drink, while simultaneously appearing to warn about alcohol harms." Hadland et al., (2019) demonstrate a link between opioid marketing to physicians and opioid related deaths.

5.2 Environmental costs

There is now virtual certainty that current consumption patterns, particularly within rich nations, will dramatically undermine long-term welfare due to their environmental consequences (Bradshaw et al., 2021; Ripple et al., 2019; Watts et al., 2019). While it is difficult to precisely estimate the negative long-term welfare impacts of such environmental market failures, climate scientists warn of 'untold suffering' resulting from increasing droughts, floods and widespread ecosystem collapse (Ripple et al., 2021). What is remarkable is that worldwide political responses do not even remotely do justice to the established scientific knowledge about the magnitude of the risks, a fact that is often traced to a misinformed public, at least within democratic societies.

The dire environmental situation clearly has many causes, among them dramatic growth of human populations (Ripple et al., 2021) and well-studied collective action problems (Hardin, 1968; Ostrom et al., 1999). The present account identifies MP as another, potentially crucial, cause. It not only contributes to these environmental problems directly, but also explains the gulf between scientific knowledge and public perceptions/political action, as we have observed above (section 4.2 on systemic obfuscation).

Almost every nudge to increase consumption is also a nudge to use environmental resources. While decoupling consumption from environmental impact, i.e. green growth, may be possible in the future, this remains a relatively distant hope not backed by present evidence (Haberl et al., 2020; Hickel and Kallis, 2020). What is interesting to realize in the present context that the very narrative of green growth constitutes a nudge. The reason is that a theoretical, well-informed, rational consumer must be assumed to base consumption choices on a comprehensive understanding of their environmental consequences. We have already noted in the context of planned obsolescence (section 4.2) that it is unlikely that individuals can cognitively fully grasp

the complex environmental consequences of their consumption behavior in even the best of circumstances. To which degree environmental considerations are reflected in consumption choices is thus crucially dependent on just such narratives about which types of consumption may be harmful and which are justifiable. In other words, behavioral and environmental market failures are inextricably interwoven and the majority of nudges engendered by MP are likely to also have an environmental dimension (Cordes and Schwesinger, 2014; Croson and Treich, 2014). Indeed, several of the systemic nudges we have outlined (e.g. planned obsolescence or systemic obfuscation, section 4.2), function specifically by undermining a consumer's ability to accurately perceive and weigh environmental costs.

Finally, we want to reemphasize the open-ended nature of proxy optimization (section 3.4). Specifically, MP must be expected to engage in a continuous, and highly efficient search for *novel ways of environmental externalization*. The reason is that the proxy can potentially always be further maximized by finding novel ways to externalize some cost to the environment. The distributed market algorithm should be expected to search this space of possibilities with high efficiency and creativity, harnessing any opportunity to increase the market-level proxy. This recasts what previous scholars might have conceptualized as relatively well-circumscribed and static 'environmental market failures' as dynamic open-ended search for new innovative ways to externalize costs to the environment. Indeed, some accounts suggest that the destruction of environmental resources can create positive externalities for proxy optimization, for instance when water pollution necessitates the purchase of bottled water (Sarracino and Mikucka, 2019).

5.3 Consumption without welfare?

According to the consumerist claim, consumption is by definition caused by genuine preferences, and must thus reflect an increase in welfare. However, throughout this paper, we have outlined how MN represents an alternative way to increase consumption, which may or may not increase welfare. A principal question arising from the present account is thus, if MP induced consumption will still make us better off. In other words, it raises the question if material consumption and welfare 'decouple' (Lima de Miranda and Snower, 2020).

We have argued, that under a more biologically and psychologically plausible account than that of the consumerist claim, preferences are split into 'needs' and 'wants' (section 4.1; Witt, 2001). The satisfaction of 'needs' should unambiguously improve welfare, and be largely independent of MP. But once needs are satisfied, MP becomes an important factor in the creation and direction of 'wants'. This account suggests that in countries where growth is driven by 'needs', the correlation between economic growth and wellbeing should be high. By contrast, in countries beyond a certain income-level, MP may become a primary driver of the consumption growth via the creation of 'wants', which may entail 'decoupling' of economic growth and welfare.

This is roughly what is observed empirically. Indeed, there is an ongoing scholarly debate if any clear relation between economic growth and various measures of wellbeing exists among rich nations (Easterlin and O'connor, 2020; Jebb et al., 2018; Kahneman and Deaton, 2010; Killingsworth, 2021; Proto and Rustichini, 2013; Stevenson and Wolfers, 2008). The mere existence of this debate is remarkable, as it flies in the face of the consumerist claim and the universal endorsement of economic growth. What is even more remarkable is that even the more optimistic analyses, i.e. those which see a clear link between growth and wellbeing (or more precisely 'life satisfation'), accept its functional form to be log-linear (Kahneman and Deaton, 2010; Killingsworth, 2021). Log-linearity means that exponential increases in economic activity (and consumption) are required to produce linear increases in welfare. Yet crucially, the material resource throughput (and CO_2 emissions) needed to create that growth are nowhere near such log-linearity, but instead appear to rise almost linearly with GDP (Goldstein et al., 2020; Wiedmann et al., 2015). A different way to say this is that economic growth decouples from wellbeing significantly faster than from its environmental footprint (Mikkelson, 2019).

What is curious about this situation, from the standard economic perspective is that, as we get richer, we must be willing to incur exponentially increasing environmental costs to obtain the same (if any) increase in wellbeing. Would autonomous rational individuals really opt for consumption, given an accurate understanding of the only minute welfare increases, and the likely dramatic negative environmental consequences? Of course, this account links the macro and the micro-level accounts in a problematic way – just because aggregate consumption does not increase aggregate welfare, we cannot deduce that individual consumption may not still improve individual welfare, e.g. due to the role of relative status (Binswanger, 2006; Frank, 2011). Nevertheless, we can certainly ask, if autonomous rational individuals really want to be nudged towards consumption (including status-consumption), given the combination of potentially negligible welfare increases, and likely dramatic negative environmental consequences.

MP suggests that consumers may engage in exponentially increasing consumption, even though they can expect only marginal (or no) real welfare benefits, because they are systematically nudged to do so. Continuous nudging of behavior, beliefs and preferences, deployed through a variety of individual and cultural-level tools, is likely to lead individuals both to systematically overestimate the welfare benefits of consumption and underestimate the social and environmental harms. As mentioned at the outset, this is precisely what Akerlof and Shiller, (2015) proposed in their analysis of 'phishing'.

In summary, the notions of proxy-based optimization and MP help to explain how perpetual exponential increases in consumption can be maintained, even if they can be related to only minute (or even absent) increases in wellbeing. Notably, such an effect of MP does not preclude, and in fact complements a simultaneous role of other explanations of a log-linear income-welfare relation such as consumption treadmills (Frank, 2011) or psychophysics (Kahneman and Deaton,

2010). For both these explanations, MP can help to explain why individuals keep pursuing consumption increases, even though they should rationally expect little welfare increases in return.

6. Summary and conclusion

In the present manuscript, we have argued that given a biologically and psychologically realistic conception of humans, unregulated markets must be expected to naturally give rise to widespread market-derived nudging (MN), simply because such nudging can increase profitability. This point has been made forcefully by many eminent authors (Akerlof and Shiller, 2015; Hodgson, 2003; Zuboff, 2019), and it is difficult to see why it is not more widely acknowledged. We have further argued that the *emergent market-level proxy*, a measure of *economic fitness* in market selection, will lead MNs to be coordinated towards a seemingly coherent *end,* paradigmatically increased consumption (Braganza, 2022; Hodgson and Knudsen, 2004). While the proxy is clearly a simplification, it can be rigorously defined, and furnishes immense explanatory and predictive power. Specifically, the evolutionary economic perspective provides a clear prediction of how the effects of MN should be expected to aggregate at the system level. The evolutionary perspective also implies immense computational power, and an open ended search for ever more sophisticated MN, wherever this improves the proxy. Together, this furnished the notion of market paternalism (MP), i.e. the emergence of a coordinated force which systematically nudges consumers towards consumption. More specifically, MP systematically gives rise to and coordinates nudges to increase the proxy, irrespective of what consumers 'really want' (Sugden, 2017; see table 1 for a summary of implications). In our view this provides strong theoretical reasons to predict MP.

Unregulated markets are not neutral.	Unregulated markets are not neutral reflections of given preferences. Instead, unregulated markets naturally give rise to an active, 'paternalistic' cultural force, which shapes not only behavior but also preferences and cultural dynamics, in predictable ways. MP must for instance be expected (and has been documented) to nudge us to unhealthy diets, insufficient savings, environmentally unsustainable consumption, and materialistic conceptions of 'a good life'. This supports the view that many governmental 'libertarian paternalist' interventions simply provide a weak counterpoint to pervasive and exceedingly efficient MP (Benartzi et al., 2017; Trout, 2005). It also supports the case for regulation more generally, for instance Pigouvian taxation of status consumption (Frank, 2011).

Market nudging is generally hidden.	As nudging in general, MP will often unfold its influence *beyond conscious awareness or understanding* of consumers. This is particularly important when nudges act on for instance beliefs or preferences. MP is arguably more problematic than governmental nudging in this respect, at least in democratic societies. The reason is that in contrast to democratic governments, corporations tend neither to disclose their nudging, nor to subject it to any form of democratic deliberation or control. *The canonical market control mechanism of consumer choice cannot be expected to function when consumers remain unaware of being influenced*.
Market nudging emerges *as if* by an 'invisible hand'	The cultural evolutionary process leading to MP must be expected to unfold *immense computational power* and *explains the emergence of design without a designer*. It is thus not necessary to search for the "planners" of planned obsolescence (Longmuss and Poppe, 2017), or the inventor of the 'gut-brain-signaling perturbation' strategy to increase food consumption. MP may be expected to always be several steps ahead of our understanding of human behavior and decision making
Market paternalism furnishes open-ended innovation.	Fourth, the cultural evolutionary force underlying MP will foster open-ended innovation and progressive sophistication of new MN. For instance, markets appear to currently be innovating digital influencing strategies with unprecedented sophistication and profound consequences for the future of individual autonomy and liberty (Calo, 2013; Luguri and Strahilevitz, 2021; Zuboff, 2019).

Table 1, Central implications of market paternalism.

We have also explored a range of potential objections against the present account, i.e. arguments that MN need not be taken seriously. These include claims that consumers are mostly rational, that market nudges will cancel each other out, or that consumer and regulatory backlash will constrain MN. All these objections are clearly true to some degree, but the crucial question is if they justify dismissing MN and MP out of hand. We have highlighted some fundamental epistemic obstacles which interfere with our ability to assess this question. Specifically, i) corporations will often not declare nudges as such and ii) it is difficult to know what consumers really want. It is truly remarkable that the second obstacle is routinely used both to criticize governmental nudging and to defend market nudging (see. e.g. Binder, 2014; Sugden, 2017, section 2.2). Nevertheless, this does not obviate the fact that there are substantial epistemic challenges in assessing the actual relevance of MP.

The only way to attack this question, is to compare MPs explanatory and predictive power with competing economic accounts, specifically the consumerist claim. We have argued that there is indeed substantial empirical evidence for MP, ranging from 'phishing' and 'dark patterns', via 'manipulated preference learning', to 'planned obsolescence' and 'systemic obfuscation'. All this has significant consequences, such as widespread obesity, covert mass surveillance, dangerous rates of environmental degradation, and arguably also what appears as almost welfare-neutral economic growth (within highly developed nations). Crucially, many of these empirical phenomena are neither predicted by, nor indeed make much sense within, the standard economic framework, where consumption can only be driven by given preferences. By contrast, they are explained and predicted by MP. What is more, MP furnishes a wealth of *prospective* predictions, for instance the emergence of increasingly sophisticated and powerful digital nudging architectures (Calo, 2013). Indeed, in her notable recent book, Shoshanna Zuboff (2019) coins the term 'surveillance capitalism' to describe a fundamentally new logic of mass surveillance for the purpose of behavioral influence, emerging from novel digital market opportunities. The more general point is that MP will become increasingly difficult to ignore in the future, even for the most dedicated skeptics.

Nevertheless, if the future is judged by the past, a cautiously optimistic general outlook seems warranted. The consequences of proxy-based competition and MP are not new, but rather have been recognized, countered, and redirected throughout the history of markets, often by broad coalitions between civil society, journalists, market actors, and politicians (Akerlof and Shiller, 2015). The present account recasts the history of the modern welfare state as a continuous process of detecting and correcting misalignments between the market-level proxy and our democratically deliberated goals, effectively guiding MP into more beneficent directions. This places it into a broader framework of evolutionary political economy (Hanappi and Scholz-Wäckerle, 2017). For instance, the continuing introduction and refinement of pharmaceutical regulations have arguably successfully countered welfare-undermining nudges (Akerlof and Shiller, 2015). There can be little doubt, that regulations which prohibit the marketing and sale of poisonous substances as universal cures, has redirected nudging by pharmaceutical markets into more beneficial directions. Indeed, the international community has repeatedly demonstrated in the past that it can leverage scientific understanding into prospective, coordinated action. Granted, there are good reasons to limit one's optimism. The magnitude of the challenges in which MP plays a role, such as climate change and mass species extinction, is greater than anything ever encountered by modern societies. Nevertheless, by elucidating MP as a significant causal force, we hope the present paper can contribute towards an actually rational collective response. The aim is that this response should reflect genuinely autonomous decisions, based on accurate information, rather than being the result of pervasive MP, which systematically manipulates our behavior, preferences and beliefs. A central question, to be debated across societal actors and with respect to every single product or marketing practice, should be: Do we

really want to be nudged towards consumption? *Prima facie*, a rational response to scientific evidence about the climate crisis would be to foster pervasive nudging *against* consumption, at least where such consumption is not clearly environmentally unproblematic.

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