

# EVALUATING THE INFLUENCE OF TECHNOLOGICAL ARTEFACTS ON HUMAN ACTION

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## Abstract

*Technological artefacts can be characterized as material objects made by human agents as a means to achieve practical ends. These artefacts primarily influence human actions in two basic ways. They can be instruments, enabling and facilitating actions as their presence affect the options for action available to us. They can also influence our actions in a morally more salient way when their presence affects the likelihood that we will actually perform or abstain from performing certain actions. In this paper, we develop a descriptive account of the influence of technological artefacts on what we actually do in terms of the ways in which facts about those artefacts affect our reasons for action. The main purpose of this paper is to offer a plausible description of how the presence of artefacts can influence human actions. Our particular claim is that artefacts can play this role because facts about them influence our reason for action. This hooks up our investigation to theories of practical rationality and (good) reasons for action, and thus facilitates the moral and rational evaluation of the particular influences the presence of artefacts has on our actions. The study shows how our investigation can deal with the phenomena covered by Latour's prescription and Verbeek's invitation. We will also suggest a specification of these concepts, which might otherwise be taken to obscure rather than clarify the various ways in which the presence of technological artefacts can influence our actions. Yet, this study insists that what people actually do, and which artefacts they actually use, is up to them. The study also attempts an analysis of why the presence of artefacts sometimes fails to influence our actions, contrary to designer expectations or intentions.*

**Keywords:** Artefacts, Reason, Prescription, Invitation, Influence, Action

## Introduction

When considering the relationship between humans and artefacts, a prevalent viewpoint is that human created the artefacts, therefore the power of persuasion or stimulation runs solely in the direction from the creator to the artefact. However, we cannot disregard the influence that artefacts have on us as humans. Though inanimate, these objects we create have real influences on our behavior and attitude. Hence, a Russian scholar, Alexander Luria asserted that “Man differs from animals in that he can make and use tools. Yet, these tools not only radically change his conditions of existence; they even react on him in that they effect a change in him and his psychic condition” (Auke, 2013, p.575).

Technological artefacts are able to influence human perception and human actions in

profound ways. Many of our visual experiences and their interpretations are mediated by televisions, computers, visual aids, and so on. Much of the information we obtain about the world is processed by computers. Similarly, technology influences our action by making new types of action possible, for example, communicating at a distance, moving at a speed well beyond natural human capabilities, intervening in the human body and brain on an unprecedented scale, or destroying entire cities in seconds with the aid of nuclear device.

Artefacts can influence our actions in several ways. They can be instruments, enabling and facilitating actions, where their presence affects the number and quality of the options for action available to us. They can also influence our actions in a morally more salient way, where their presence changes the likelihood that we will actually perform certain actions. Both kinds of influences are closely related, yet accounts of how they work have been developed largely independently, within different conceptual frameworks and for different purposes. In this paper, we account for both kinds of influences within a single framework. Specifically, we develop a descriptive account of how the presence of artefacts affects what we actually do in terms of the ways in which facts about those artefacts alter our reasons for action. In developing this account, we will build on Dancy's account of practical reasoning. We will compare our account with two alternatives, those of Latour and Verbeek, and show how our account suggests a specification of their respective key concepts of prescription and invitation. Further, we argue that our account helps us in analyzing why the presence of artefacts sometimes fails to influence our actions, contrary to designer expectations or intentions.

When it comes to affecting human actions, it seems artefacts can play two roles. First, they can facilitate human actions. Here, the presence of artefacts influences the number and quality of the options for actions available to us. For example, their presence makes it possible for us to do things that we would not otherwise be able to do, and thereby adopt new goals, or helps us to do things we would otherwise be able to do, but in more time, with greater effort, etc. (Houkes & Vermaas, 2004). In this role, artefacts are instruments, means that can be used to achieve a certain end. In short, in this role, the presence of artefacts affects what people can do. Yet, what people actually do, which artefacts they actually use, is up to them.

Philosophers who investigate this role tend to do so for normative purposes: in analyzing how the presence of artefacts affects what people can do, (and what people could know about that), they seek to establish rational standards for, example, functionality and (instrumental) goodness (Auke, 2013, p.576).

Artefacts can also play a second role, where their presence increases the likelihood that people will perform, or abstain from performing certain actions. In this role, the presence of artefacts affects what people actually do. Authors like Akrich (1992) and Latour (1992) have argued that artefacts (themselves) can prescribe actions to us. Following their lead,

Verbeek (2005) has argued that artefacts mediate actions in part by inviting or inhibiting us to act in a certain way. For example, speed bumps can be said to prescribe slowing down to the oncoming driver, while Sport Utility Vehicles seem to invite reckless driving. Philosophers who investigate this role tend to do so for descriptive purposes, to come to general, yet revealing analysis of the different ways in which the presence of artefacts changes how we relate to the world, for example, how we see the world and act in it, and how the presence of artefacts shapes scientific practice, politics, or Societies (Auke, 2013, p.576).

It is clear that both roles are not clearly demarcated and overlap. For example, in many cases where the presence of artefacts affects what we can do, it also affects what we actually do. However, by and large, philosophers working on different roles of artefacts have developed their ideas on the relation between artefacts and human actions independently. And while those philosophers have criticized each other's approaches, there have been little attempts to account for each other's insights. The lack of cross-pollination between both groups is unfortunate and not only because there is no lack of different and interesting insights in both fields, with which both groups could strengthen each other's accounts; it is also because both groups aim to advise engineers and designers with regard to good or ethical design (e.g. Houkes et al., 2002; Verbeek, 2006), yet, it would be difficult for engineers and designers to compare the merits and flaws of these advices due to the different underlying philosophical and methodological assumptions.

In this paper we will take the conceptual framework commonly used for investigating the first role of artefacts (how their presence affects what we can do) and making normative claims about them, and apply it in a descriptive investigation of the second role of artefacts (how their presence affects what we actually do). The main purpose of this paper is to offer a plausible description of how artefacts play their second role, how their presence influences human actions, thus grounding the normative claims made on the basis of this framework. Our particular claim will be that artefacts can play this second role because facts about them influence and alter our reason for action. This will hook up our investigation to theories of practical rationality and (good) reasons for action, and thus facilitates the moral and rational evaluation of the particular influences the presence of artefacts has on our actions. To put the account to the test, we will show how it can deal with the phenomena covered by Latour's prescription and Verbeek's invitation. We will also suggest a specification of these concepts, which might otherwise be taken to obscure rather than clarify the various different ways in which the presence of artefacts can influence our actions.

With respect to giving advice to engineers and designers, this account also allows us to go beyond the actual influence of the presence of artefacts on human actions and look at cases where it fails to influence human actions, contrary to designer intentions or expectations. For example, suppose that people regularly crash on a certain speed bump. Our account can then suggest possibilities why the presence of the speed bump did not

influence driver actions the way it should have done: the relevant facts might not have been perceived, the offered reasons for slowing down might not have been considered a relevant one, etc.

To show how we can explain how the presence of artefacts influences human actions in terms of reasons, in section 2 we explained what we take to be reasons for action and how they work, using Dancy's externalist account of practical reasons. In sections 3 and 4 we show how reasons for action can be provided or changed by facts about artefacts, and how this allows us to give an account of the various ways in which the presence of artefacts can influence our actions, including prescription and invitation. Finally, in section 5 we address a possible counterargument to our claim that a reasons account can explain how the presence of artefacts influences human actions.

### **Dancy On Practical Reasons**

For Dancy (2004), reasons for action are facts that favor or disfavor a certain course of action for an agent. For example, if I drive in my car and approach a speed bump, the fact that I am approaching a speed bump would be a reason for me to slow down. Besides being reason, facts can play two more roles in Dancy's account (Dancy, 2004). The first role is that of enable/disable. An enabler is something that enables a fact to be a reason [for action]. For example, the facts that I would destroy my car or that I would hurt myself when driving too fast over a speed bump enable the fact that I am approaching a speed bump to be a reason for me to slow down. Similarly, a disabler disables a reason to count as such. The fact that my car has excellent suspension systems can disable the fact that I am approaching a speed bump to be a reason for me to slow down. The second role that facts can play is that of the intensifier/attenuator, which can make a reason a stranger or weaker reason for action. The fact that I am taking my old grandmother for a ride does not in itself give me a reason for slowing down if there is no speed bump, but it may intensify my existing reason for slowing down (the fact that I approach the speed bump), because she will suffer as well if I drive too fast over it (Dancy, 2004).

As a note on terminology, facts can change: they can be brought about or destroyed, depending on circumstances. The fact, for instance, that I am approaching a speed bump is brought about (made the case) by me taking a particular road in which a speed bump has been constructed. As soon as I take a side road, avoiding the speed bump, the fact that I approach it has been destroyed – it is no longer the case. Note also that even if some fact about an artifact provides a reason for action, that action need not be the (morally) best, or even a good, option. The fact, for instance, that there is an obstacle in the road may be a reason for a car driver to take a diversion over the bicycle path, but it would not necessarily justify that action.

Furthermore, facts about artefacts can seem to be reasons for action, while they actually are not. Hence, Dancy's commitment to the claim that reasons favor or disfavor certain courses of action allows him to say that agents can have reasons to act if they do not desire to act, even if they were to be fully informed and had deliberated rationally about what to do (Dancy, 2004). This, according to Auke (2013, p.579), is what makes Dancy an

externalist about reasons, as opposed to reason-internalists who hold that agents only have a reason for action if they, knowing all the relevant facts and after rational deliberation, would be motivated to do that action.

The structure of our account of how technological artefacts influence human actions gets practically relevant if we wish to advise engineers and designers, investigate why some technologies succeed and others fail, or evaluate design methodologies like value-sensitive design, where artefacts are designed for values that actual users may or may not hold. Consider, for instance, a new technology, a universal household appliance developed that could be used as a vacuum cleaner and a food mixer, among other uses (Lintsen, 2005, p.264 cited in Auke, 2013, p.577). While nothing was wrong with the technology itself, it never became a success. We can develop a number of questions with which to start our investigation of why this technology failed such as: Were the right facts present? Were the relevant agents aware of those facts? Were those facts enabled to be reasons for action (by their moral features, or by features of the agent or the context)? Were those reasons intensified to be good reasons for action, both instrumentally and morally? Were the good reasons actually motivating?

In this specific case, it turned out that the agents (potential users) found the idea of cleaning the house and preparing food with the same appliance repulsive. In other words, they judged the value of flexibility to be less important than values of, say, cleanliness and hygiene. In our account, we could say that facts about the artifact were reasons for using it, and that the agents were aware of that. The agents, however, generally did not consider those reasons to be good reasons. In addition, the reasons against using the artifact were considered to be much stronger, by the agent, than the designers had anticipated.

Having gone into Dancy's account of practical reasons, we shall now examine how facts about artefacts alter our reasons for action when those artefacts prescribe and invite actions in what follows.

### **Artefacts as Prescribing Actions**

According to Auke, (2013, p.577) the notion of artefacts prescribing actions originates in Akrich (1992) and was subsequently picked up by Latour (1992). Akrich argues that artefacts contain 'scripts' that prescribe actions to users. These scripts do not get in the artefacts by accident: they are inscribed by engineers, based on the engineers' view of who the users will be, in which context the artefacts will be used, and so on. Unfortunately, scripts may also be inscribed unintentionally due to false expectations or oversight on the part of the engineer, leading to artefacts prescribing undesired behavior or discriminating against groups of users (Auke, 2013, p.578). Latour (1992, pp.158-159) gives the example of the door outfitted with a door-closer that requires so much effort to open that it prescribes 'push to open' only to able-bodied persons: the very young and very old have to find another way to enter.

Similarly, the effects of the artefacts's presence are dependent on its context and working condition, which means that a change in either of those factors can trigger a change in

script. Latour (1992) gives a number of examples where artefacts prescribe behavior. Two well-known examples of Latour are the speed bump in the road and the seat belt that, when not fastened, activates an alarm and a flashing light. One characteristic is common to these examples: actions are enforced to some degree by the presence of the artefacts mentioned. In Latour's words, "I will call the behavior imposed back onto the human by nonhuman delegates, prescription" (Latour, 1992, p.17).

In a footnote to the above quote, Latour weakens the meaning of prescription by saying: "We call prescription whatever scene presupposes from its transcribed actors and authors (Latour, 1992, p.17). He then gives the example of a painting that is designed to be viewed from a specific angle of view. The meaning of prescription seems simply to be that artefacts have a specific use plan that users have to follow in order to successfully use the artifact (Houkess & Vermass, 2004).

Auke (2013, p.5579) observes that the prescription of action comes in two degrees. The first is soft prescription. This includes the prescription of actions by the speed bump and the seat belt. Here, there is no physical force, but not using the artefact in a certain way will have certain negative consequences, and characteristics of the artifact make the user aware of that. Those who race over the speed bump damage their cars and their backs, those who do not fasten their seat belts have to put up with the alarm. The presence of the speed bump and the seat belt thus provides their users with a reason against not following a specific course of action.

Strictly speaking, it is perceiving the behavior of an artifact that can make the user aware of certain facts that are reasons (e.g. perceiving a moving obstacle rising out of the road, or a traffic sign simply being in place at a prominent spot). There are many ways in which artifact users can be made aware of facts that are reasons (from physical cues to signs, notices, commercials, etc). Also, while artefacts are often designed to make users aware of certain facts that count as reasons for action, designer intentions are not necessary to induce awareness of such facts (for example, in the case of the moving obstacle that has been broken down).

The second form of prescription is hard prescription: the moving obstacle on the road prescribes stopping by making it impossible to drive on. Here, there is physical force, so not using the artifact in a certain way will be impossible, or have overwhelmingly negative consequences, and characteristics of the artifact make the user aware of that. In terms of reasons, not only do facts about the moving obstacle provide a reason against driving on, the fact that doing so would wreck one's car, but as driving on is in fact made impossible, the reason for driving on are destroyed as well, as one cannot have reasons to do the impossible (Streumer, 2007).

It should be noted that all artefacts in the above examples are used because of their instrumental value. We do not drive over speed bumps because doing so serves a certain purpose; we rather have to deal with them as part of using the road. Some drivers use their seat belts as instruments for a purpose, to increase their own safety, while others may consider them to be like speed bumps, that is, as nuisances that have to be dealt with when driving. Nevertheless, we will call all these dealings 'use,' as we consider use to be

performing an action or executing a plan involving an artifact, regardless of our reason for doing so. Of course, if we choose not to use the road or the car, the speed bump, the moving obstacle and the seat belt do not prescribe any behavior to us.

Thus, it follows that the prescription of action can alter the reasons for our action. Here, the presence of the artefact makes certain facts the case (if you do anything but this, X will happen) that are enabled by other facts (X is bad for you) to be reasons for action, and that are presented as such to the user. We will spell out our previous suggestion of how this works for both soft prescription (the seat belt with the alarm) and hard prescription (the moving obstacle). Let us consider the following for soft prescription:

1. Okonkwo's car will get him quickly from point A to B.
2. Okonkwo has to get from point A to B quickly (thus enabling 1 to be a reason for him to take his car).
3. So Okonkwo has a reason to take his car.

If Okonkwo takes his car, then:

4. If he were to drive without fastening his seat belt, as he desires, the alarm and a flashing light would be activated.
5. Okonkwo is annoyed by loud alarms and flashing lights (thus enabling 4 to be a reason for Okonkwo against not fastening his seat belt).
6. So, Okonkwo has a reason against not fastening his seat belt.

Of course, 4 is not the only reason for Okonkwo against not fastening his seat belt. Not fastening his seat belt increases his risk of suffering harm in the case of an accident, and that is a reason for him against not using it even when there is no alarm. Nor does 4 ensure that Okonkwo does indeed fasten his seat belt, for, perhaps he dislikes wearing it so much that that fact gives him a stronger reason not to fasten it, and he decides to put up with the alarm – or abandon his plan of taking the car altogether.

For hard prescription, the following also apply:

1. Okonkwo's car will get him quickly from point A to B.
2. Okonkwo has to get from point A to B quickly (thus enabling 1 to be a reason for him to take his car).
3. So Okonkwo has a reason to take his car.

However, when Okonkwo drives on and encounters the moving obstacle:

4. If Okonkwo were to drive on, his car would crash.
5. If Okonkwo's car were to crash, he would not be able to get from point A to B quickly anymore (thus enabling 4 to be a reason for him against driving on, as he desires).
6. So, Okonkwo has a reason against driving on.

Again, this is in addition to other reasons Okonkwo would have against driving on: that he would risk being injured, that he would have to spend time and money on fixing his car or buying a new one, etc. With soft prescription, Okonkwo can just grit his teeth, put up with the alarm and drive from point A to B. With hard prescription, this is impossible, for if he drives on, the moving obstacle will crash his car, and he will never get to point B. What happens here is that not only does Okonkwo have a reason against not stopping, but also facts that are reasons for doing alternative actions (like driving on) are

destroyed. Therefore, we need to add the following in our example:

7. If Okonkwo wishes to get from point A to B quickly, he has to drive on (reason for him to drive on).

However, when the moving obstacle appears:

8. Driving on is made impossible (thus destroying the fact that is a reason for driving on in 7).

From the ongoing, it seems that an artifact prescribes an action if certain actions are enforced (to some extent) on the agent because of its presence. This is most likely to happen when the agent cannot avoid the artefact in the pursuit of certain goals. This means that even instruments can prescribe actions as Houkes & Vermaas rightly observe: a bottle-opener does not prescribe opening wine bottles, but if you have to open a wine bottle, the opener does prescribe how you should go about it; it prescribes its proper use. In other words, the bottle-opener has a use plan you have to follow if you wish to open the bottle with it (Houkes & Vermaas, 2004).

We can, therefore, say that an artifact prescribes an action if facts about it provide reasons against not doing that action (as with the seat belt) and the agent is made aware of that; in addition, those facts may destroy or disable facts that could have served as reasons for doing any other relevant action (as with the moving obstacle). An artifact may also prescribe an action if facts about it intensify a reason against not doing that action, or attenuate facts as reasons for doing any other relevant action.

It might be tempting to say that the moving obstacle prescribes stopping because the fact of its presence provides you with a good reason to stop, rather than with good reason against driving on. However, we use the second formulation here to distinguish between cases where there is a promise of positive consequences (as is the case with invitation) versus cases where there is a threat of negative consequences (as is the case with prescription). Moreover, it should be noted that this temptation arises because there is only one other relevant action here, driving on. If we were to assume that there are multiple relevant actions available (taking a side road, driving over the grass, etc), it would be clear that the presence of the obstacle does not provide us with a good reason to stop if it does not simultaneously destroy our reasons for bypassing the obstacle, for we could simply take one of the alternatives. If there were multiple relevant actions available, the presence of the obstacle would provide us with a good reason against performing a particular action, namely driving on. But this would not be prescription, as it would not enforce particular behavior. In this case, presence of the moving obstacle would merely remove one possible action from a set of many.

Finally, Auke (2013, p.5579) noted that in case of bad design, it may seem that an artifact prescribes an action without the user being aware of it. For example, suppose that a particular moving obstacle is hidden in the road so well that even attentive drivers do not notice it until it rises up under their cars. Here, according to Auke, there are good reasons for stopping, but they are not available to the drivers. This case, however, is not one of prescription. For, we can certainly not say that the presence of this artefact affects what we do – it just crashed our cars.

### Artefacts as Inviting Action

When an artifact prescribes an action, it does so with a certain force. When an artifact invites an action, there is no force, but its characteristics rather make the agent aware that that particular action can be performed, and that there is some reason to do that particular action (Auke, 2003, p.579). When, for instance, a restaurant owner in a Yoruba tourist resort invites a passing tourist into his establishment, he is not forcing the invitee to come in, but rather suggesting that she should come in, and that there are good reasons for doing so: his wine is excellent, he plays authentic Yoruba music, etc. Of course, these facts might not be (good) reasons for the tourist – perhaps she detests wine and authentic Yoruba music. The fact is that an invitation does not carry force, but neither is it always enticing.

Auke (2003, p.577) noted also that the idea that artefacts can invite actions is suggested by Verbeek (2005), who, according to Auke, extends the earlier work of Ihde (1990). Ihde is mainly interested in how technologies affect perception. He claims that technologies *mediate* our perception of the world: they give shape to our perception, and thereby influence how we experience the world (Ihde, 1990). For him, this mediation can take several forms, for example embodiment, where an artifact used to perceive the world (like a pair of glasses), becomes part of the agent; or representation (the hermeneutic relation), where the agent perceives an artifact that represents the world in some way, like a thermometer.

Verbeek argues that artefacts do not only mediate perception, but action as well: artefacts actively shape our actions as well as our perception. Apart from this, Verbeek's notion of mediation is meant to do more work: he claims that “mediation consists in a mutual constitution of subject and object” (2005, p.130). Like Ihde, Verbeek distinguishes several possible ways in which artefacts can do so. The most important way for our present purposes is translation, where the artifact changes our relation with the world by inviting certain actions and inhibiting others. Verbeek (2005) illustrates the translation relation with the example of obstetric ultrasound technology. He claims that on the one hand, this technology can be said to invite abortions, since it can make parents aware of inborn deficiencies or risk factors for hereditary diseases of the fetus. On the other hand, it can also inhibit abortions by confronting the parents with the fetus as a real, live human being, which can strengthen the emotional bond between the parents and the unborn child.

As we observed earlier, when an artifact invites an action, its characteristics make the agent aware that there is an opportunity for action, and that there is some reason to perform that action. Note that this awareness does not have to be conscious: the agent just needs to have access to those facts in some way. With simple artefacts, making an agent aware of an opportunity for action can be easy. For humans can often quickly see what they can do with artefacts and other objects, though the actual perceived action opportunities may depend on the need of the observer (Gibson, 1979, c.8). With more specialized or complex artefacts the observer might need knowledge of a use plan to

see them (Houkes and Vermaas, 2004).

Inviting is not only about making the agent aware of an opportunity for action, but also about providing a reason for doing that action and making the agent aware of an existing reason for action. Again, this does not necessarily mean that any agent will consider the relevant fact to be a proper reason for action, let alone a good reason. Artefacts are usually designed with typical (groups of) users in mind who are likely to respond to the invitation, that is, who would consider the provided reasons good reasons for action. The artifact would invite other agents as well but they might just not consider the provided reason to be a good reason, or have other reasons not to respond to the invitation. For instance, a comfortable chair can be said to invite sitting, even though the fact that it is comfortable might be a good reason for me to sit on it, insufficient reason for you to sit on it, and no reason at all for a baby to sit on it, who might need firm support in order to sit upright at all. Thus, Verbeek (2005, p.133) concludes that whether a fact is a (good) reason for action depends on both observer and context.

Like prescription, invitation has a soft and a hard variant. In the soft variant, the balance of reason is not altered by facts about the artifact; its characteristics only make the user aware of opportunities for actions and facts that count as reasons for performing those actions. Persuasive technologies, artefacts that are intentionally designed to change the user's attitude, behavior or beliefs, often work in this way (Auke, 2003, p.580). For example, in cars, the presence of a prominent speedometer makes you aware of a reason to drive faster or slower (that you are under or over the legal speed limit). In this car, facts about the speed of the car are not changed, but different facts are made available to the user that may constitute reasons for different actions.

In addition to the soft variant of invitation is a hard variant, where the user is not only made aware of opportunities for actions and facts that count as reasons for performing those actions, but also about facts about the artefact that *do alter* the balance of reasons. This can be done by creating or intensifying a reason to perform an action, or by creating new opportunities for actions that agents might have reasons to perform (Auke, 2003, p.581). An example of the first kind would be the piano staircase where piano notes are played as one walks up and down the steps, adding a reason for using the stairs. An example of the second kind would be the bath that looks inviting because it makes an activity possible which the agent may have a reason to perform (e.g. because bathing can be relaxing). In fact, it seems that every artifact that makes an action possible for which the agent can have a reason also invites it, assuming its characteristics makes the action possible.

### **Evaluation and Conclusion**

In this section, we will begin by considering a possible argument against our account of artefacts influencing human action, where facts about them alter our reasons for action, and discern whether this phenomenon threatens our account. The argument runs as follows: artefacts may influence our actions without facts about them altering our reasons to act. Humans show all kind of (unconscious) biases in their behavior that may be irrational. One way in which our behavior can be changed is by situating the artifact so that our biases may be exploited. For instance, TV screens in buses may grab our attention without showing us

anything worthwhile, and in the supermarket, products sell better when placed at eye level than on the bottom shelf. All things considered, it does not seem that we have any special reason to watch the screen or by the product at eye level. Yet it seems that we can say that the screen prescribes watching it, and the product at eye level invites us to buy it. These would then be cases where actions are prescribed and invited whereas our reasons for action are not altered.

Perhaps, it is undeniable that our behavior may be changed by exploited our psychological biases, whether or not this is done through artefacts. This, however, need not be a problem for my account. We have already seen that facts about artefacts, can provide us with reasons to act while leaving the choice of action to us, but this is compatible with them exerting inescapable causal force. It is not impossible for us to drive over a speed bump at high speed, yet if we choose to do so, we will suffer the negative effects, and that fact is a reason for us to slow down. Here, what generates the reason is a fact about a physical effect that is causally necessitated, but such effect might also psychological. The TV screen might prescribe looking at it by impeding other actions, in which case you would be able to look away by exerting your willpower, or it could practically unavoidable force you to look at it, in which case you would need to resort to a strategy to avoid looking at, like turning your back to it. The reason against looking away is then simply the fact that it requires more effort to look away than to look at the screen. Again, this may not be a very good reason to look at the screen, but it is a reason nonetheless: people may still act on it and cite it to explain or justify their behavior.

While both Latour and Verbeek tie their concepts of prescription and invitation explicitly to technology. There seems to be no reason no reason why natural objects could not also prescribe and invite. For instance, snow on the road can be said to prescribe slowing down, and a lake can be said to invite swimming. We, therefore, find it unnecessary to differentiate between artefacts and natural objects in this respect, for facts about both can alter our reasons for action.

Returning to verbeek's example of obstetric ultrasound technology, it seems that this technology invites agents to act by making them aware of facts that were already reasons for them. The fact that a certain fetus has an inborn deficiency might be a reason for abortion, the fact that it looks human already might be a reason against abortion, but such facts are not accessible without ultrasound technology. Ideally, the characteristics of such technology would make you aware of all the relevant facts for considering what to do. In practice, though it often leaves the user unaware of certain relevant facts, for example, because of the low resolution of an image. Or worse still, distortion of the facts might occur, for instance, if the ultrasound machine screen shows the fetus as larger than it actually is. Here, something is presented as a fact that might be a reason for action, while the 'fact' is actually not the case.

One may wonder, however, whether it is not better to focus on the fact that count as

reason, such as facts about inborn deficiencies, that happen to be made available to the agent by a certain technology rather than focusing on the technology itself as Verbeek did. For Verbeek, it is the ultrasound machine that invites or inhibits actions. On the one hand, this difference in focus does not matter for the purpose of explaining behavior, for the child that an unborn child has certain inborn deficiencies cannot make a difference to what we do if we cannot know about them (through technological artefacts). On the other hand, Verbeek's use of 'invitation' suggests that the ultrasound machine is primarily responsible for any change in behavior, whereas it seems that we might rather want to say that 'inborn deficiencies invites abortion' whenever we come to know about them – through ultrasound machine or otherwise.

Furthermore, invitation seems to be a comparative term, which raises questions about how it should be used. For instance, suppose that a new type of ultrasound machine highlights inborn deficiencies, whereas the old type does not. Should we say that the new type of machine is 'more inviting' when it comes to abortions than the old type? Perhaps, to avoid questions of this kind, there is need to focus on the facts (about the abortion deficiencies) that are reasons for action, as this will bring to fore the fact that the normative force of those reasons is independent from our uncertainty with regard to or limited knowledge of the facts. The ultrasound example is further complicated by the fact that having the ability to make ultrasound scans does not necessarily imply that we can actually terminate pregnancies.

Generally speaking, we can say that an artifact can invite an action in two ways. The first is when its characteristics make the agent aware of an opportunity for action, and existing reasons for performing that action. Those reasons can be false reasons if the 'fact' provided by the artifact are not the case, but would have been reasons if they had been the case: here, the invitation is also a deception. The second possibility for an artifact to invite an action is when the artifact provides an opportunity for an action which the agent has a reason to do, or when facts about the artifact provide the agent with reasons for that action or intensify existing reasons, and the agent is made aware of that. In other words, the artifact may invite an action if facts about it destroy, disable or attenuate facts as reasons against performing that action and the agent is made aware of that, provided that there are also reasons for performing that action.

In conclusion, we reinstate the general claim of this paper, namely the facts that Artefacts do not only influence human actions by making actions possible and facilitating them, but they also influence what we actually do. Both kinds of influences seem to be closely related, yet accounts of them have been developed largely independently, and within different conceptual frameworks, used for different kinds of purposes. In this paper we have developed a descriptive account of how the presence of artefacts affects what we actually do, which is based on a framework commonly used for normative investigations into how the presence of artefacts affects what we can do. Specifically, we have argued that the presence of artefacts can affect what we actually do because facts about them can alter our reasons for action. Moreover, this account can help us in analyzing why the

presence of artefacts sometimes fails to influence our actions, contrary to designer expectations or intention.

Finally, it should be noted that we are responsible for our use of artefacts. For, though an artefact may be developed to destroy human existence, that artifact will not act on its own out of malice. It would be employed at the direction or the negligence of human agents. Inadvertent byproducts of technology can be mitigated by interdisciplinary analysis, comprehensive experimentation, meticulous planning and responsible governing. Failure to control these byproducts would not be the fault of the technology, but that of the humans who control implementation of the artifact.

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