

Teleology, Intentionality, Naturalism*

This paper argues for the contemporary tenability of a “mentalist, Scholastic-Aristotelian” theory of teleological explanations, *pace* contemporary physicalism/naturalism.¹

I. THE NEED FOR TELEOLOGY IN VOLUNTARY ACTION

Plato’s Socrates in the *Phaedo* points to the inevitable need for teleological considerations in the explanation of human actions in the following way:

[someone might say] that I sit here because my body is made up of bones and muscles; and the bones, as he would say, are hard and have joints which divide them, and the muscles are elastic, and they cover the bones, which have also a covering or environment of flesh and skin which contains them; and as the bones are lifted at their joints by the contraction or relaxation of the muscles, I am able to bend my limbs, and this is why I am sitting here in a curved posture – that is what he would say, and he would have a similar explanation of my talking to you, which he would attribute to sound, and air, and hearing, and he would assign ten thousand other causes of the same sort, forgetting to mention the true cause, which is, that the Athenians have thought fit to condemn me, and accordingly I have thought it better and more right to remain here and undergo my sentence; for I am inclined to think that these muscles and bones of mine would have gone off long ago to Megara or Boeotia – by the dog

* This paper is (a somewhat “spruced up”, but basically unrevised version of) the author’s translation of a lecture he delivered in Hungarian at a conference entitled *Action and Social Science*, on June 18, 1993, at ELTE, Budapest, Hungary.

¹ Now that logical positivism is a thing of the past, the pretty well-defined requirement of “physicalism” has given way to the (by all appearances deliberate), much fuzzier desire for “naturalism”, as if replacing the Greek word with the Latin should make much difference. In any case, the argument that follows is helpfully supplemented on many points by Haldane 1989.

they would, if they had been moved only by their own idea of what was best, and if I had not chosen the better and nobler part, instead of playing truant and running away, of enduring any punishment which the state inflicts. There is surely a strange confusion of causes and conditions in all this. It may be said, indeed, that without bones and muscles and the other parts of the body I cannot execute my purposes. But to say that I do as I do because of them, and that this is the way in which mind acts, and not from the choice of the best, is a very careless and idle mode of speaking. (Plato: *Phaedo*. 98c-99b, tr. Jowett)

Indeed, it seems that when we are asking about why some conscious, voluntary human act took place, then in the response to this question it is not enough to refer to the act's material or efficient causes. For the voluntary character of the action means that what determined it was the decision of the agent. But we cannot say that it was the decision of the agent that determined the action if the agent's action was determined by some material and efficient causes distinct from the agent's decision.

Consider the following scenario: Mr. Smith is found at midnight walking on the roof of his house in his pajamas: Why? One possible explanation is that Mr. Smith is a sleepwalker, and it is only his disturbed brain-state that makes him perform the dangerous acrobatics. The important thing is that the explanation in this case ends there: he is a sleepwalker, which means precisely that his action was neither conscious nor voluntary, and thus the funny workings of those bones, sinews and muscles Socrates was talking about provide sufficient explanation for his strange behavior.

However, what if we know that Mr. Smith was perfectly conscious and in perfect possession of his power *to choose* to be on the roof? In that case, even if his movements are exactly the same as in the previous case, we would want to know more: Now that we know that his behavior is determined by his choice, we would also want to know why on earth would he *choose to* walk on the roof at the dead of night in his pajamas?

When we learn that he just saw Mr. Taylor slip out from his wife's bedroom window trying to escape through the roof, then we know the explanation of Mr. Smith's strange behavior: he is on the roof *in order to* catch Mr. Taylor, the seducer!

So, now we know why teleological explanations are necessary, at least in the case of voluntary actions: since in their case, what determines the action is *the choice*, but what determines the *choice* is the *intended end*: we can only know why such an action is performed, when we know *to what end* it is performed.²

² Cf. Aquinas, *Summa Theologiae* I-II, q. 1, a. 1.

II. THE NEED FOR TELEOLOGY IN NON-VOLUNTARY, INSTRUMENTAL ACTION

But is it only voluntary actions that require teleological explanations? In his *On the Principles of Nature* Aquinas replies ‘no’ to this question:

We have to know, however, that every agent, natural as well as voluntary, intends some end. But from this it does not follow that all agents recognize this end or deliberate about the end. For to recognize the end is necessary only for those agents whose acts are not determined, but which can have alternatives for [their] action, namely, voluntary agents, who have to recognize their ends by which they determine their actions. However, the actions of natural agents are determined, so it is not necessary that they elect the means to an end. (Thomas Aquinas: *On the Principles of Nature*, c. 3, in *Klima* 2007. 161.)

So, although in the case of voluntary agents it seems to be obvious that we need teleology for a satisfactory explanation of their actions, since their voluntary actions are determined by their choice, which in turn is determined by the intended end they want to achieve by their action, in the case of non-voluntary agents or even non-voluntary acts of voluntary agents, it might seem that teleology has no place in their explanation. After all, if Mr. Smith was driven to the roof by his somnambulism, then there is no point in asking to what end, or for what purpose he was walking on the roof in the dead of night in his pajamas.

However, as Thomas points out, there is still some point in talking about the end or purpose of some act, even if it is not the agent’s own, deliberately targeted, consciously recognized end. For instance, if someone doesn’t understand why a circuit breaker tripped in the house, and receives the explanation that it was because there was a power overload in that circuit, then she may still meaningfully ask: alright, but why is the circuit breaker’s tripping a good thing, to what end does it trip when there is an overload; after all, what’s the point of shutting down the power in the whole house, why is that a good thing if there is no power in the house at all? We should notice that in this case the questioner understands fully well that the action of the circuit breaker is determined to it: if there is an overload, given its mechanism, it trips. And thus, she also knows that the action in question is not voluntary, not determined by the agent’s free choice to achieve some end. Yet, the question implies that the action took place for the sake of some end, while it does not imply that the end is the agent’s own intended and consciously recognized end. For the questioner perfectly understands that recognizing and intending some end belonged to the principal agent, in our case the electrician, who used the circuit breaker as a means to achieve his end, which in our case is the prevention of an electrical fire that would result from an overload if the circuit were not shut down, and it is the identification of this

end that would provide a satisfactory answer to her question. After all, having a temporary blackout is better than having your house on fire.

Thus, it makes perfect sense to talk about the ends of non-voluntary acts or other phenomena when they are instrumental to achieve the intended end of a principal, voluntary agent. That this is so can be seen even more clearly when we are considering non-voluntary acts of voluntary, human agents, provided they are instrumental to the intended end of another voluntary agent.

For instance, if the by now much-molested Mr. Smith is driven to the roof (in the dead of the night in his pajamas!) neither by his unconscious somnambulance nor by his conscious desire to catch Mr. Taylor, but under the influence of some hypnotic suggestions, then it is, again, entirely pointless to inquire into his purposes, given that his poor, spell-bound bones, and muscles are simply obeying the hypnotic suggestions. But even in this case it is perfectly legitimate, indeed, necessary to question the hypnotizer's purposes, which he will even have to account for in the investigation following Mr. Smith's tragic fall.

Therefore, we can meaningfully talk not only about the end of a non-voluntary act or other phenomenon, insofar as it is instrumental to the intended end of a principal, voluntary agent, but we would not even understand the instrumentality of the phenomenon in question until we know this intended end: we may know what caused the tripping of the circuit breaker (overload), or Mr. Smith's unconscious walk on the roof (hypnosis), but we may still need to know to what end these things happened (avoiding an electric fire, or to murder Mr. Smith and get away with it).

III. A "MINIMALIST THEORY" OF TELEOLOGICAL EXPLANATIONS

So, to sum it all up, based on the foregoing considerations we can provide the following rather plausible, indeed, trivial theory of teleological explanations.

1. One cannot provide a satisfactory explanation of a deliberate, voluntary act without referencing the end, goal, or purpose for the sake of which the agent chose to perform the act in question.
2. Non-voluntary actions and other phenomena may also be goal-directed or purposive, insofar as they are instrumental to the intended end of a principal, voluntary agent.
3. The purposiveness of instrumentally purposive agents can satisfactorily be explained only with reference to the end intended by the principal agent.

For all its plausibility, nevertheless, this simple theory can be attacked in many ways from several angles. In what follows I want to argue through the analysis of only one typical objection for the claim that this objection can appear to be plau-

sible only on the basis of certain metaphysical presumptions that are radically different from those of the Aristotelian metaphysical tradition to which a theory of teleological explanations originally belonged. Indeed, the analysis will show that once these different metaphysical presumptions are explicated, then, for all their “modern scientific character”, the objection would rather speak for some general Aristotelian positions.

IV. THE NATURALIST OBJECTION

As can be seen, the theory sketched here is unambiguously “mentalist”, insofar as it ties teleological explanations to mental phenomena, conscious recognition of the end (at least in the case of principal, voluntary agents), and free choice or decision to act for the sake of the preconceived end. However, for this reason, to a naturalist committed to explaining away even such apparently obviously goal-directed phenomena in terms of ordinary physical causation obeying the laws of physics, the theory may appear to be committed to a highly suspicious, obsolete metaphysics on many counts.

For according to the first thesis of the theory, what determines the choice of a voluntary agent to act is *the preconceived end* for the sake of which the agent chooses to act. However, the end is either (1) the product of the action or (2) some imagination or mental representation of this product. But apparently in both cases we end up with some absurdity. For in the first case, (1) we would have to assume some weird case of “backward causation” wherein a temporally later state of affairs would determine an earlier one. In the second case, (2) the mental representation of the end is either (2a) some purely mental object, an *ens rationis* or figment of imagination, or (2b) some purely spiritual act or (2c) some bodily state of the agent. However, attributing causality (2a) to mere beings of reason or figments of imagination is just as much of a category mistake as attributing colors to numbers. (After all, this is why a scared child can be assured that the boogeyman could not harm him, since the boogeyman is just a figment of imagination.) On the other hand, (2b) a purely spiritual act is already an ontologically dubious item in itself, whatever that is, but it is certainly doubtful whether and how such an item could act on material beings; after all, no-one has yet discovered the formula for mass-spiritual-energy equivalence. Finally, if the mental representation in question is (2c) a bodily state, then there is no good reason for treating it in a special theory burdened with all sorts of obsolete, mystical connotations; on the contrary, what we should do is get rid of these outdated ideas and deal with the relevant phenomena in the framework of our well-working theories of contemporary physical sciences. So, even if teleological explanations may appear to be necessary within common, everyday conversations littered with all sorts of ancient superstitions

(“keeping body and soul together”, “bless you!”, “cross my heart and hope to die”, etc.), in their original mentalist form they have no place in the modern, scientific world view.³

V. TELEOLOGY AND INTENTIONALITY

In connection with this objection, we should first point out that the causality of the end is of course essentially different from the causality of efficient causes; if it were otherwise, final causes would not constitute a separate genus of the four genera of Aristotelian causes.⁴ Thus, the fact that an efficient cause has to be actual in order to exert its causality implies nothing concerning the causality of an end, and so it may be perfectly possible that an end as such does not need to be actual when it exerts its specific kind of causality.

But still, what is that “end as such”, and how can it “work” (oh, well, “in its specific way”) if it is not yet actual? Well, if we are considering the end of a voluntary, goal-conscious, *successful* act in itself, then it is simply some result of the action. However, this result was not the end or goal of the action only because it resulted from the agent’s action, for in this way just any result of the agent’s action could be regarded as the action’s goal, but that is absurd. For example, if I pour some water into my glass, as a result of this action the air is replaced with water in the glass, but still this replacement of the air is not the goal of my action if I simply pour the water in order to drink it. But this replacement will at once be the goal of my action, if that is what I intend to achieve by the action, say, in the course of an experiment in a chemistry class. What makes a result of the action of a voluntary agent its goal, therefore, is that it is the intended, *intentional object* of the decision of the agent.

But it is precisely at this point that the objector will lose his patience and charge us with the well-known accusation of multiplying all sorts of “weird, mystical entities”. So, let us see, once again, whether it is possible to provide satisfactory explanations for voluntary acts without any reference to these “mystical” entities, and if not, whether they are indeed so “mystical” that they could not possibly have a place in contemporary science.

First, let us not forget the reason for introducing these “intentional objects” in the discussion of the foregoing example. As the example shows, the end or goal of an action is distinguished from any other result of it by the intention of the agent, namely, that the agent precisely intended to achieve *this* end by the action and not any other coincidental, perhaps, even necessarily co-occurring

³ See Nagel 1977. 261–301; Wright 1976; Bedeau 1991. 647–655; Matthen 1991. 656–657; for further naturalistic reductionist attempts, see W. Lycan 1990.

⁴ For the issue of the causality of intentions vs. real forms, see Klima 2021.

result of it. Thus, it would be impossible to distinguish between any old result of the action from its goal, if some of its results were not distinguished as the end intended by the agent, as the intentional object for the sake of which the agent performs the action. But this means that we could give up the distinction between result vs. intentional object only if we were also willing to give up the distinction between any old result and the goal or intended end of the action. However, since the action is voluntary precisely because it is performed for the sake of the end voluntarily chosen by the agent, the conflation of the end with any old result would eliminate the distinction between voluntary and non-voluntary acts, thereby invalidating any moral and legal discourse that ties moral and legal responsibility for the act to the voluntary character of the act in question (if your dog bites a passerby, it's not the dog's moral or legal responsibility but yours for not keeping it on a leash). Thus, if we do not want to give up on the meaningfulness of legal and moral discourse, (and why should we?) in the name of some narrow-minded, blinkered, mechanistic conception of science,⁵ but still, we do not want to give up on science, indeed, on the possibility of meaningful discourse in general, then we have to work with a scientific conceptual framework that can accommodate discourse about intentional objects as well. But it seems that this is prevented precisely by the weird, mystical character of intentional objects. However, we also know that there used to be a certain kind of science, namely, scholastic Aristotelian science, in which physics and ethics, efficient causality and teleology, physical and intentional objects each found their place in perfect harmony. Let us see, therefore, whether those intentional objects are indeed as insufferably mystical or perhaps it is only the historically understandable, but conceptually rather contingent anti-Aristotelianism of early modern science that wraps it into an only to us impenetrable mystical mist.

VI. INTENTIONALITY VS. PHYSICALISM

As we can see, the intentional object of an act and its result often coincide, namely, when the act is successful, and realizes the agent's intended end. In this case, therefore, there is nothing mystical in the intentional object, because it coincides with an ordinary physical object, the result of the action. However,

⁵ Since one of the referees of the original version of this paper felt somewhat offended on behalf of naturalists by this characterization (I quote: "which suggests as if those who do not acknowledge the necessity of teleological explanations were somehow not epistemic and cognitive peers of the author and get their drive from misunderstandings and superstitions (e.g., fear of "weird, mystical entities")"), I should perhaps clarify that I am not lumping together all naturalists under this phrase: I am only talking about those who do fit under it; examples would be especially from the 18th century, although we could easily find later examples as well, but when it comes to hurt feelings, *nomina sunt odiosa*.

even in this case, there is a difference between their conditions of identity. This can be seen most clearly if we consider the fact that one and the same result of a voluntary act can both be and not be the intentional object of a certain result of a voluntary act. As is well-known, Oedipus wanted to marry Iocaste, but he did not want to marry his mother, although, as a matter of fact, Iocaste was his mother; ergo, as a result of their wedding, Oedipus married his mother. In this case, the intentional object of Oedipus' voluntary act, namely, to have Iocaste as his wife, coincides with the result of his action, namely, that he married his mother and thus he had his mother as his wife. And yet, this result was definitely not the intentional object of his act, indeed, he wanted to avoid this result throughout his life. Of course, what accounts for the difference is the fact that Oedipus did not know that Iocaste was his mother, and thus he did not know that marrying Iocaste was the same as marrying his mother. Had he known her identity, he could not have wanted the one without the other. Thus, it is part and parcel of the conditions of identity of the intentional object how this object is represented in the voluntary agent's mind, or in scholastic terminology, what is that *ratio* under which the agent's mind represents it.⁶ However, having identified this *ratio*, we can identify the intentional object as well without further ado, and thus it can be applied in an exact fashion in both the scientific and the moral description of Oedipus' behavior.

To be sure, the above-described imaginary champion of modern science will probably not be any happier with this "solution", in which now instead of one mysterious entity he has to deal with two: the intentional object and its *ratio*, not to mention the obsolete, barbaric terminology.

Well, in the age of "nice quarks", we may perhaps set aside the Johnny-come-lately humanist squeamishness about the terminology; so, we may focus on the things themselves no matter what we call them. In any case, the objector can still say that since we ended up with the result that the goal/end/purpose of some voluntary agent is characterizable as such on account of how some result of the action is represented in the agent's mind, we can get around the entire hocus-pocus by focusing on this mental representation itself, which we can then describe as some ordinary neurophysiological phenomenon in terms of a successful physicalist reduction. In this way, we can of course still keep the language of teleological explanations, perhaps, for some practical, or nostalgic, or maybe historically important reasons, while always knowing that this simple,

⁶ For a scholastically inspired formal treatment of a logically similar intentional paradox, see Essay 5 of Klima 1988. For the relevant notion of *ratio*, basically, the intelligible content of an object grasped by a mental representation that determines the identity conditions of the mental representation itself, see Klima 1993; 2015. Also note that with this understanding, the phrase can also refer to the mental representation itself, strictly identified in terms of its semantic content, regardless of what encodes this content in some or another particular (type of) medium. So, the "multiple realizability" of a *ratio* is *ab ovo* built into its notion.

obsolete language just stands in for a more complex, but scientifically reliable physicalistic, neurophysiological explanation (much like ordinary loose talk about hot and cold stands in for the scientifically exact notion of temperature, analyzable in terms of the mean kinetic energy of particle movement).

In connection with this reasoning, there are two points that are clear at once. On one hand, its validity is at least highly dubious until someone actually carries out the requisite “physicalist reduction”, for until then the “neurophysiological phenomena” in question have no more explanatory power than the *rationes* of the scholastics, whatever those are. On the other hand, it should also be clear that on account of a possible successful physicalist reduction all moral and legal discourse about responsibility will have to be reduced just as the psychological discourse about goals and voluntary choices grounding it. It is a good question, then, whether the need to get rid of “mystical entities” can justify such a program, especially if it turns out that despite their absence from modern (physicalist) scientific discourse they are not that mysterious after all. And it is yet another question whether such a reduction can be carried out at all, whether it would not run into some principled, conceptual obstacles that would render the task impossible to complete. Let us look at this last worry first.

As has been seen, the distinction between physical objects and intentional objects was prompted by the difference between the intended end and any other physical result of some voluntary act. We could also see that intentional objects had to be distinguished from physical objects, even in cases when they actually coincide with physical objects, because the intentional objects have different criteria of identity (see marrying Iocaste vs. marrying Oedipus’ mother). There is nothing surprising in this. We know that the criteria of identity of things can vary with the ways we refer to them, since these ways determine their classification, distinction, counting, and re-identification. For instance, to the question of how many things there are in this room, the answers may range from the number of macroscopic substances to the number of their macroscopic or microscopic, even subatomic parts, their attributes, various collections, relations, or the number of facts, events, or processes taking place, not to mention the number of concepts or thoughts we are engaging right now. Thus, in connection with the reduction program, the question is whether the neurophysiological phenomena in question are such that their criteria of re-identification are at least as good for the identification of intentional objects as are the *rationes* of the scholastics, whatever the ontological status of the latter.

Now it is clear that the *rationes*, as mental representations, are identifiable by means of linguistic expressions, although their criteria of identity are not the same as those of linguistic expressions. These mental representations are conceptual structures that can be expressed in terms of radically different linguistic structures in different languages. Think, for instance, of the different syntactical structures by which a negation, which is certainly a distinctive element of

a conceptual structure, can be expressed in different languages. But then the same conceptual structure will correspond to different linguistic representations in different languages, and so, also, there will be different neurophysiological phenomena taking place in the nervous systems of the speakers of different languages while they are processing the same conceptual structures in their respective languages. Indeed, in the nervous system of the same bilingual speaker there will be different neurophysiological phenomena taking place while the speaker is processing the same conceptual structure in different languages (as in preparing a translation). Thus, the criteria of identity of neurophysiological phenomena are always different from those of the *rations*, the conceptual structures identifying voluntary agents' intended ends as their intentional objects, and so they will never provide a good means for the identification of these intentional objects, and thus for their elimination in a physicalist reduction, while keeping teleological discourse meaningful.

At this point someone might object, of course, that this piece of reasoning does not prove that the same conceptual structures represented by different linguistic structures must correspond to different neurophysiological phenomena, as it is possible that on a deeper neural level the processing of different linguistic structures is mapped onto some neurophysiological phenomena directly matching the conceptual structures in question.

The objection may seem to be legitimate, but it does not really help the completion of the physicalist project. In the first place, we just don't know whether there are some such "deeper" neurophysiological phenomena.⁷ And even if there were, they would not be much help. For the mere possibility of a one-one match between conceptual structures and some deeper neurophysiological phenomena is not sufficient for the viability of the physicalist project, because for the viability of the project it is necessary that this one-one match is necessary, and not merely contingent, for it is only this condition that guarantees that any possible conceptual structure is unambiguously matched with the correct neurophysiological phenomenon. For it is only this necessary connection that can guarantee that the description of any possible conceptual structure is correctly eliminable in terms of the corresponding neurophysiological description, much in the same way as if there were no unambiguous machine code translation of the instructions of a high-level programming language, then the latter could not

⁷ To be sure, if there were such "deep" neurophysiological phenomena, they would constitute a uniform mental language, a "language of thought", à la Jerry Fodor, for all humans, encoded in those phenomena. I raised several doubts concerning there being such a uniform "language of thought", regardless of whether it is encoded in a material or some "spiritual" medium, and also concerning the theoretical usefulness of positing such a uniform mental representational system here: Klima 2012. Of course, I'm not alone with such doubts, but perhaps my arguments present a rather different perspective from usual criticisms.

in principle be eliminable in the machine code, that is to say, a possible correctly written program would not compile.

However, the previous piece of reasoning showed precisely that there is possibly no one-one correspondence between conceptual structures and neurophysiological phenomena; therefore, the logically necessary connection between the two required by the viability of the physicalist project does not obtain. For the point of the argument is that neurophysiological phenomena as such, even if they may correlate with conceptual structures, are essentially differently classifiable and identifiable from conceptual structures. And this is so because conceptual structures as such are essentially representative; thus, it belongs to their conditions of identity what and how they represent. However, from the study and description of a neurophysiological phenomenon in itself it will never be apparent what and how it represents, as it only logically contingently correlates with its object, whereas a conceptual structure is identifiable precisely on the basis of what and how it represents.⁸ So, studying the neurophysiological phenomena can give us no more information about their semantic, representational features than looking into the magnetic polarities of a computer hard drive would yield its contents without knowing the code that establishes by the logical necessity of conventional encoding the connection between magnetic patterns and what they represent under that code.

To be sure, this argument is not to be read as an attempted knock-down proof against the possibility of the logically contingent (but perhaps causally necessary) identity (or just correlation) of concepts (*rationes*), or even all sorts of “mental states”, and neurophysiological phenomena.⁹ In the first place, there is nothing wrong with the idea, especially in the case of sensory states or processes (such as acts of perception, sensory memory, or imagination, etc.), which obviously require for their occurrence (or may even consist in) the activity of some (external or internal) sense organs. Perhaps, in the case of higher intellectual functions we may have good reasons to doubt the possibility of such identifications,¹⁰ but that is not the point of the foregoing argument. The argument rather intends to show

⁸ On the necessity of the connection between object and concept, see Klima 1991. The basic idea in a nutshell is that a concept is nothing but the form of the object in the mind. Since the concept is the form of the object, its reception in the subject necessarily makes the subject actual in regard of the form of the object, although not in the same way as it makes the object actual: for it makes the object *to be actual* in its real being in regard of the form, whereas it does not make the mind actual as it makes the object actual in its real being, but it makes the mind *to be actually cognizant* of this form. Thus, the formal content of the actuality is the same, but the mode of actuality is different, which stems from the natural difference of the recipients. As Thomas states in many places: *receptum est in recipiente secundum modum recipientis*.

⁹ I am grateful to another anonymous referee for providing me with the opportunity for this clarification by making the objection that my argument does not prove that this contingent identity or just correlation is not possible, “or, at any rate, no argument is given in the paper that the viability of the physicalist project is ruined by such a contingent association.”

¹⁰ For my latest musings on Aquinas’ relevant argument and its implications for AI, see Klima 2022.

that even if all mental representations were in fact logically merely contingently identical with neurophysiological phenomena, that logical contingency would in principle prevent carrying out the physicalist/naturalist reduction of teleological explanations of voluntary actions, because we just could not have a reliable code allowing us to read off intentions from brain scans, which any such reduction deserving the name would have to be able to carry out.

VII. NATURALISM VS. MODERN ARISTOTELIANISM

Neurophysiological phenomena as such, therefore, cannot replace the conceptual structures that play a crucial role in identifying the intended ends of voluntary agents. But what are these conceptual structures if they cannot be identified either with linguistic or with neurophysiological phenomena? This is what makes them so disturbing, namely, that apparently they always slip out from the sphere of “reliable” entities that are clearly identifiable by means of scientific methods!

But where is it set in stone, we may ask, that it is only the scientifically identifiable entities that are “reliable”? If we are looking for scientific exactitude, we shall sooner find it in mathematics than in physics, and if there is anything laudable in the glorious 20th century, then it is the fact that it is the thinkers of that century that made the mathematical modelling of conceptual structures possible. Thus, if within this mathematical framework we are able to obtain an exact way of grasping these conceptual structures, the scholastic *rationes*, then their “mysticism” as well as that of their intentional objects will be just as problematic as mathematical entities are, that is, from the point of view of a scientific world view, not a whit. To be sure, this does not mean that the ontological status of mathematical entities or conceptual structures and their intentional objects would not pose a genuine philosophical problem. But that is the philosophical problem we cannot and need not go into at this point.¹¹ After all, the issue here is not the metaphysics of intentions, but the irreducibility of teleological explanations and the possibility of their integration into a more broad-minded scientific project, closer to the scientific ideals of scholastic Aristotelianism than to the ideals of a Newtonian-Laplacian mechanics. At any rate, it should be clear that it was precisely the naturalistic objection that prompted the philosophical considerations that in turn directly led to this traditional philosophical problem, thereby pointing us toward a philosophical, Aristotelian ideal of science, instead of pointing toward a narrow-minded, blinkered physicalism,¹² chasing in vain the pipe dreams, or at least so far only the promissory notes, of a physicalist reduction.

¹¹ See, nevertheless, Klima 2014; 2015.

¹² Which phrase, again, is not meant to derogatively apply to all possible and actual forms of naturalism.

VIII. CONCLUSION: WHY *MODERN* ARISTOTELIANISM?

All this should not mean, though, that instead of the theory of relativity now we should study Aristotle's *Physics* (although we should not neglect that either) or that we should put all our faith into the Aristotelian, rather the Mendeleevian elements. On the contrary, we should rather strive to present such a philosophical understanding of the theory of relativity and of the Mendeleevian elements, and all the rest of modern scientific facts, theories, and phenomena that, just like the Aristotelian tradition, would not render human discourse in the humanities meaningless.

However, we should also notice that besides setting up some loose analogy and a vague value-requirement, the Aristotelian philosophical tradition can provide us with some more direct help. As the foregoing analysis of the problem of teleological explanations illustrated, the conceptual framework of the Aristotelian tradition, although by and large may be "out of fashion", in a modern formal interpretation can not only live up to the modern requirements of scientific exactitude, but it can even fill in its philosophical gaps. In particular, it shows that teleological explanations can function as perfectly legitimate scientific explanations, once we understand their specific character, and we do not try to squeeze them into the straitjacket of some unfounded scientific ideal in terms of a physicalist, naturalist reduction. But, having seen this much, we could also understand how we can provide teleological explanations even for the agency of non-voluntary agents, insofar as it is instrumental in the agency of voluntary agents. As we can also see, such non-voluntary, instrumental agency can perfectly be explained without any reference to their end, for it is only their instrumentality that would be inexplicable without reference to the intended end of the principal agent. Thus, non-voluntary natural phenomena can perfectly be accounted for in terms of some physicalist explanation, seeking to understand merely what accounts for the coming to be or sustaining of such phenomena.

However, such explanations will never satisfy someone for whom the whole of nature and any and all phenomena in it are instrumental to some overarching intelligent purpose. As we have seen, the possibility of "complete" naturalistic explanations will never eliminate the legitimacy of teleological questions, and thus the entire modern army of the "Newtons of a blade of grass"¹³ will not eliminate the eternal human question: "And for what purpose is the whole creation?"¹⁴

¹³ Cf. "we may boldly state that it is absurd for human beings even to attempt it, or to hope that perhaps someday another Newton might arise who would explain to us, in terms of natural laws unordered by any intention, how even a mere blade of grass is produced" (Immanuel Kant 1790/1987. Part II, sect. 75, n. 400. 282.)

¹⁴ Imre Madách: *The Tragedy of Man*, tr. Tomschey, O., Budapest, Madách Irodalmi Társaság. 2000. 4. l. 97. For the scholastic idea of *natural teleology* understood in terms of an

REFERENCES

- Aquinas, Thomas 1250/2007. *On the Principles of Nature*. In Klima (Ed.) *Medieval Philosophy: Essential Readings with Commentary*. Oxford, Blackwell Publishers.
- Bedeau, Mark 1991. Can Biological Teleology Be Naturalized? *The Journal of Philosophy*. 88. 647–655. <https://doi.org/10.5840/jphil1991881111>
- Haldane, John J. 1989. Naturalism and the Problem of Intentionality. *Inquiry*. 32/3. 305–322. <https://doi.org/10.1080/00201748908602196>
- Immanuel Kant 1790/1987. *Critique of Judgment*. Trans. Werner S. Pluhar. Indianapolis, Hackett Publishing Company.
- Klima, Gyula 1988. *Ars Artium: Essays in Philosophical Semantics, Mediaeval and Modern*. Budapest, Hungarian Academy of Sciences.
- Klima, Gyula 1991. Ontological Alternatives vs. Alternative Semantics in Medieval Philosophy. *S: European Journal for Semiotic Studies*. 3–4. 587–618.
- Klima, Gyula 1993. The Changing Role of *Entia Rationis* in Medieval Philosophy: A Comparative Study with a Reconstruction. *Synthese*. 96. 25–59
- Klima, Gyula 2012. Ontological Reduction by Logical Analysis and the Primitive Vocabulary of Mentalese. *American Catholic Philosophical Quarterly*. 86. 303–414.
- Klima, Gyula 2014. The Problem of Universals and the Subject Matter of Logic. In Penelope Rush (Ed.) *The Metaphysics of Logic*. Cambridge, Cambridge University Press. 160–177.
- Klima, Gyula 2015. Mental Representations and Concepts in Medieval Philosophy. In Klima Gyula (Ed.) *Intentionality, Cognition and Mental Representation in Medieval Philosophy*. New York, Fordham University Press. 323–337.
- Klima, Gyula 2021. Form, Intention, Information: From Scholastic Logic to Artificial Intelligence. In Ludger Jansen – Petter Sandstad (Eds.) *Neo-Aristotelian Perspectives on Formal Causation*. London, Routledge. 19–39.
- Klima, Gyula 2022. Language and Intelligence, Artificial vs. Natural, or What Can and What Cannot AI Do with NL? In Henning Bordihn – Géza Horváth – György Vaszil (Eds.) *Proceedings of the 12th International Workshop on Non-Classical Models of Automata and Applications* (EPTCS 367). <https://doi.org/10.4204/EPTCS.367.1>
- Lycan, William. G. (Ed.) 1990. *Mind and Cognition: A Reader*. Cambridge, Blackwell.
- Matthen, Mohan 1991. Naturalism and Teleology. *The Journal of Philosophy*. 88. 656–657. <https://doi.org/10.5840/jphil1991881112>
- Nagel, Ernest 1977. Teleology Revisited. *The Journal of Philosophy*. 74. 261–301.
- Wright, Larry 1976. *Teleological Explanations*. Berkeley, University of California Press.

intrinsic drive in all creatures to share in divine perfection to the capacity of their nature by completing the possible perfections of their nature, each in its own way as God intended, see, e.g., Aquinas, *Contra Gentiles*, lib. 3 cap. 2; *Summa Theologiae* I, q. 44 a. 4 co.