

THE AIM OF SCIENCE – KNOWLEDGE OR WISDOM*

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Abstract. *The typical way to express the aim of science is to connect it with knowledge pursuit. This aim has been so strongly felt that sometimes typical scientific research has been called knowledge-inquiry. There is nothing wrong with knowledge as such. Especially when we have the knowledge of the highest quality, the scientific one, in mind. Still, science today should aim higher, surpass knowledge as its final goal and reach for wisdom. This brings about the need to implement wisdom-inquiry instead of knowledge-inquiry as Nicholas Maxwell has suggested. In order to succeed, the problems of living rather than the problems of knowledge have to be brought to the foreground.*

Keywords: *Nicholas Maxwell, knowledge-inquiry, wisdom-inquiry, Rein Vihalemm, φ -science*

Introduction

Scientific knowledge is believed to be an especially valuable creation of the human mind. Modern science has strongly been aimed at knowledge pursuit up to this day. The British philosopher of science Nicholas Maxwell has been calling contemporary scientific research knowledge-inquiry. This term is in full accord with the understanding of science as standard empiricism. This notion has been explained by Maxwell in several books and papers at length and in detail (see, for instance, Maxwell 1974; 1976; 1998; 2004).

The topic has been addressed by Peeter Mürsepp (see Mürsepp 2011). In addition, the following analysis owes a lot to the conception of φ -science developed by Rein Vihalemm (see, for instance, Vihalemm 2001, 2007).

There is another aspect in what follows where Rein Vihalemm is directly involved. Moving towards wisdom presupposes special attention to practice as a crucial moment in the connection of human beings to objective reality and interactions with it. Practical realism initiated by Rein Vihalemm is a major step forward in this respect.

We are going to build on Nicholas Maxwell's critique of standard empiricism and knowledge-inquiry. This brings Sir Karl Popper into the picture. Maxwell is a follower of Karl Popper's critical rationalism

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in its veiled form. However, Maxwell takes the stand that Popper's critical rationalism does not enable to achieve a breakthrough in the academia that would enable the progress from knowledge-inquiry towards wisdom-inquiry. We shall take a closer look into this issue.

Science as Knowledge Pursuit

There wouldn't be any need to abandon standard empiricism if it were a functioning approach for getting to know the world. It is true that the great achievements of contemporary science cannot be denied. Adhering to knowledge-pursuit has enabled us to learn a lot about the world out there. It has helped us to build up a technologically advanced, at least to some extent, civilization. Still, all these great achievements have not brought about the solution of the so-called global problems as well as the problems of living, the problems that we human beings are facing in our lives most strongly and directly. This is the reason why something has to be changed in the whole approach to science. A fundamental change would hardly be possible without a revolution concerning the basic aim of scientific research. There is nothing wrong with knowledge, especially the scientific one. The latter is a valuable achievement of the human mind that continues evolving. The corresponding philosophy of knowledge, however, does not enable science to reach for any higher goals. We are trapped in our knowledge pursuit.

What is the reason of the current situation? One might say that scientists and methodologists have been too strongly un-

der the spell of a special image created by physics. The problem is more complicated than it seems. Obviously, there is nothing wrong with physics as such in principle. It definitely is an ideal science in its own right. But it is a branch of working science, not a model. This fact puts physics into an ambiguous position. We, philosophers and methodologists of science, have been in need of a model for long already. Fortunately, today we can say that the model has been provided. This is the model of φ -science of Rein Vihalemm. The model has been explained in detail by its creator in different papers. Perhaps, the basic essence of φ -science is one special property. Namely, its method is not simply hypothetico-deductive but constructive-hypothetico-deductive (Vihalemm 2001: 189). It has a technological origin in a way but mathematics plays at least as important part. Rein Vihalemm explains: "Actually, φ -science, in the case of which we can suppose that objects must conform to our knowledge, or to be more precise, to the mathematical projection, becomes possible and justified thanks to the fact that in modern times the treatment of nature through technology acquires legitimacy" (Vihalemm 2001: 189-190). And a few lines further on: " φ -science does not describe the "given" reality "as it is", but does it only from the aspect of the laws of nature, constructing idealisations for this, which model the reality from the viewpoint of the technological practicability of these idealisations" (*Ibid.*: 190). The explanation provided by Rein Vihalemm is marvellous for our current purpose. It helps us to see the disguised reason of the special power of knowledge

pursuit in modern science. Science fails to study the world as it really is in the sense of standard realism (see Vihalemm 2012). It rather takes the idealisations that fit into our structure and understanding of rigorous knowledge as its objects of interest. This is the very reason of the entrapment mentioned above. We, methodologists of science, have been brought under the spell of physics as the only science proper. Even more importantly, the efficiency of the scientific method has become dependent on the skilful construction of sophisticated idealisations ready for being studied with the help of the contemporary methods fine-tuned by the language of mathematics rather than the ability to be of real help to us humans in securing and developing the quality of our existence on planet Earth. It is difficult to include practice based approach to worldly matters in knowledge-inquiry of this type.

As a short side remark, we have to note that the understanding of physics as a constructive-hypothetico-deductive science (φ -science) is indebted to Immanuel Kant's theoretical philosophy. Perhaps, this new understanding could even be called a revival of an old but largely forgotten observation. Here it might seem so because we are not taking an exhaustive view of the application of the model of φ -science in the philosophy of science but employing it just for our purpose, the purpose of explaining science as knowledge-pursuit in its limits. The conception of φ -science has a much broader scope. For instance, it is of great help in pointing out the special status of chemistry as partly a physics-like science

(φ -science) as long as it deals with the laws of nature (of chemistry, not physics), partly not, as long as it deals with substances (stuff). Last but not least, the model of φ -science helps us to understand the reach of the classical scientific method and even evaluate its suitability in the academia of the present day. A major question follows. Do we need to model each and every science after the example of physics? Perhaps there is an area of academic knowledge that cannot be obtained by adhering to the classical method in principle. It may well be that social science and humanities, may be even the whole non- φ -science, has to find its own original foundation that is flexible enough for their needs. This is something that the genius from Königsberg was not prepared to claim and could not be as social science did not exist in his days. But he continued to reach for higher goals, for wisdom. This task has largely been forgotten by the contemporary thinkers, be it philosophers of science or scientists themselves.

Knowledge alone would not help us to achieve interaction with reality. Practice has to be involved. Without stressing the role of practice we cannot start looking for wisdom. There are two main sources of practice-based approach in the history of philosophy – pragmatism and Marxism. Obviously, we could take just a very abstract look at wisdom, viewing it along the lines of the Heraclitean *logos* without any reference to practice. This is not the approach that we shall follow. Our understanding of wisdom will adhere to the position expressed by Nicholas Maxwell: “‘Wisdom’ may quite legitimately mean a variety of

things, depending on context, and the aim we have in mind. ... by wisdom I mean the capacity, and active desire, to realize what is of value in life, for oneself and others, wisdom thus including knowledge, technological know-how and understanding, but much else besides" (Maxwell 2010: 17). Thus, for Maxwell, wisdom is rather connected to the practical ability of solving important problems of real life than high-flying pondering about abstract categories. However, his call for a "New" Enlightenment as a general intellectual environment necessary for the effective implementation of wisdom-inquiry is an original development that builds on the Popperian critical rationalism.

Now we have to specify our understanding and approach to practice in the context of our movement towards wisdom-inquiry. There are different paths ready that we might follow. For instance, there is the practice-based philosophy of science developed by Joseph Rouse as a radical philosophical naturalism (1987; 1996; 2002; 2003). There is the approach of Sami Pihlström of understanding pragmatist philosophy of science as a variety of realism, the pragmatic one (1996; 2008). Last but not least, there is the conception of practical realism of Rein Vihalemm (2011). The latter, based on five main theses (Vihalemm 2011: 48) is the most appropriate one as a point of departure for the current treatment. The reason for this is Vihalemm's proximity to Maxwell. Vihalemm has directly pointed out the connection, claiming that four of the main theses of practical realism are obviously

important to Maxwell. Just the importance of the experiment has not attracted Maxwell's special interest. The points about the role of scientific theories in practical research as well as the normative aspects of science are clearly important to Maxwell (*Ibid.*: 57).

It is interesting to observe that the main reason of the untenable status of standard empiricism, pointed out by Maxwell, is not that it is too far from empirical reality but rather an abstract and general issue. Namely, as Nicholas Maxwell insists, in order to secure constant development of science we need to find an underlying unifying metaphysical assumption.

Science as Knowledge-Inquiry

In the previous section we have singled out the main reason for understanding science proper as knowledge pursuit. It is the spell of physics-likeness. Modern physics as we know it and appreciate its achievements is effective in itself but should not be presented as a model for other branches of science. It is based on the activity of constructing the research object for itself along the lines of knowledge pursuit. The object had to be knowable. Such methodological approach is almost perfect for acquiring new knowledge but prevents the researcher to go beyond that task. This has all been said in general terms without a direct reference to any particular thinker. In the current section, however, we are going to take a look into the essence of Nicholas Maxwell's knowledge-inquiry.

Maxwell's critique of knowledge is sharp. Maxwell admits that the aim of

acquiring new knowledge with the help of the scientific method should be helping to promote human welfare (*Ibid.*: 26). From this very standpoint, however, knowledge-inquiry can be called damagingly irrational (*Ibid.*: 27). This statement can be explained with the help of the so-called rules of rational problem-solving. They are as follows:

- (1) Articulate, and try to improve the articulation of, the problem to be solved.
- (2) Propose and critically assess possible solutions.
- (3) When necessary, break recalcitrant problems into easier-to-solve preliminary, subordinate, specialized problems.
- (4) Interconnect basic and specialized problem-solving so that each may guide the other. (*Ibid.*: 30)

According to Maxwell, knowledge-inquiry violates three of these four rules. The same applies to the whole academic inquiry as it exists today (*Ibid.*: 30). Here, Maxwell shows up his direct orientation on the need to have practical interaction with reality in the course of scientific research in order to enable at least addressing the problems of living and problems of action. Otherwise, we remain trapped in knowledge pursuit without an interest in reaching for any further goals. After all, science should produce something of value. Knowledge, even theoretical one, can be taken as value in itself. A good question would be, however, do we need a value in itself that is not even aesthetic? This would not help to solve our problems of living.

Knowledge inquiry cannot address the problems of living in principle. It is restricted to tackling the problems of knowledge. Coming back to the rules of rational problem-solving, Maxwell claims that the only rule knowledge-inquiry can obey, even put it into practice, is rule number (3) (*Ibid.*: 31–32). All three of the other rules, however, are beyond reach for knowledge-inquiry. The case of the first two rules is especially interesting. There seems to be nothing particular about these rules. Nevertheless, Maxwell finds that knowledge-inquiry fails to implement these rules. The core of the failure lies in the scope of the term ‘problem’ here. Knowledge-inquiry is definitely able to articulate, solve and assess the solutions of the problems of knowledge. But this is where it stops.

Assessment of the philosophy of Karl Popper may suggest another conclusion to us. Critical rationalism of Sir Karl was clearly focused on an effort that can be directly connected to rules number (1) and (2). In his very basic book Popper writes: “the one method of all *rational discussion*, and therefore of the natural sciences as well as philosophy ... is that of stating one’s problem clearly and of examining its various proposed solutions *critically*” (Popper 1959: 16). As Popper states here, his method applies to both natural sciences and philosophy. But this is not the main point here. One might say that the core of the matter is not connected to overstressing the role of natural sciences but rather an opposite one. Popper is famous for his severe criticism of specialisation. This is what prevented him from putting rules (3)

and (4) into action. Maxwell has an interesting observation here. His point is that Popper was too much opposed to specialization to appreciate that it can be seen as a vital component of rationality, that the potentially harmful effects of specialization can be counteracted by implementing rule (4) (*Ibid.*: 30). The point is well taken as Popper's opposition to specialism was really notorious to say the least: "If the many, the specialists, gain the day, it will be the end of science as we know it – of great science. It will be a spiritual catastrophe comparable in its consequences to nuclear armament" (Popper 1994: 72). As a matter of fact, Maxwell's own opposition to knowledge-inquiry is very similar to Popper's 'fear' of increasing specialism. However, he is not that strict concerning the situation with respect to rule (3): "Knowledge-inquiry, as pursued in universities today, does, however, put rule (3) into practice to a quite extraordinary extent" (*Ibid.*: 32). Still, things remain in very bad state as far as all the other three rules are concerned. Thus, knowledge-inquiry is not able to tackle the crises in modern life, to give priority to the problems of living over the problems of knowledge.

Maxwell calls our current state of affairs concerning academic inquiry damagingly irrational. Perhaps we should be somewhat fairer towards rationality here. It is hardly the divide between rationality and irrationality that is at stake here. Knowledge-inquiry is very rational in a way. We have a rationally constructed method we can follow while developing science as knowledge pursuit. We can

even apply a quite rigorous model, that of ϕ -science, as we saw above. In this sense we could rather say that knowledge-inquiry is even too rational. The picture is different, however, if we take a broader look at rationality, viewing it as a philosophical conception or a methodological approach, i.e., aim-oriented rationality of Maxwell. But the final goal is still wisdom.

Science as Wisdom-Inquiry

The switch from knowledge-inquiry to wisdom-inquiry can be astonishingly simple. It can be defined as an approach that enables us to put all the four rules of rational problem solving into practice. As we see, rationality cannot be abandoned but should be overcome, should be implemented in a reasonable way. This may sound as a tautology, but nevertheless. In addition, it might be reasonable to reformulate the first two rules we are dealing with:

- (1) Articulate, and seek to improve the articulation of, those *personal, social and global conflicts and problems of living we need to resolve in order to realize what is of value in life* (my italics – P. M.);
- (2) Propose and critically assess possible increasingly cooperative *actions* designed, if performed, to enable us to solve our problems, realize what is of value of life (Maxwell 2010: 34).

There is one crucial observation to be made here. Knowledge-inquiry takes physics (or ϕ -science) as its ideal model. In the case of wisdom-inquiry, this does not work

any longer. The switch from knowledge-inquiry to wisdom-inquiry does not require a big change in the vocabulary but a revolution in the understanding of the academia. Physics alone cannot put rules (1) and (2) into practice in principle. It can resolve its own problems, the problems of physics but not the problems of living. Social science and humanities have to occupy the centre-piece. But it is not just about changing positions in the academic structure.

The whole approach to social science has to change by its essence. Social science has been understood as doing research into society just like physics is doing it into nature. At the same time it has been a constant worry that social science is not well established (does not include paradigms), is not successful enough as far as research results are concerned, etc. There may be a substantial reason for this. What if the whole approach has been flawed? After all, society consisting of human individuals is quite a different object to study than nature, even with respect to life sciences. But this is not the main issue here. Social inquiry, including all branches of social science, has been pursued as knowledge-inquiry so far. It has been the claims of knowledge about some special social issues that has been the outcome of such traditional social inquiry. One can hardly claim that obtaining such kind of knowledge makes no sense whatsoever. But still it need not and perhaps should not be the main task of a social scientist. We tend to forget about our practical needs when we remain focused on knowledge. According to Max-

well, social inquiry should be not about claims to knowledge but rather proposals for action (Maxwell 2010: 38). Is it really as simple as that?

There is an important gap here from the point of view of contemporary academia. Many social scientists are actually interested in practical action, in providing service to society. But this is not what the academia expects from them. The evaluating criteria of researchers, either in natural or social science, are tied to bibliometrical data. Nothing more, except publications in peer-reviewed journals and citation indexes is considered important. These criteria have mostly been worked out by natural scientists based on their own research traditions where most of the work has been done in laboratories in research groups and published by multiple authors who work on the basis of well-established methods. Such approach would not do much harm to natural sciences themselves. In the case of social inquiry, however, the outcome has been devastating. People who are active in *socialia* and *humaniora* are prevented from addressing the society not to speak of having a dialogue with it. Another result of the gap is the distrust of social scientists among the politicians. The matter is two-sided here. Social scientists have failed in predicting different global phenomena in politics and economy, like dissolution of the Soviet Union or the recent financial crises. It may well be, however, that these failures have also happened as the results of deeply flawed approach to social issues in the academia. Perhaps, more practice oriented approach to economic cycles or po-

litical and cultural unrest, i.e. combining of knowledge obtained with the help of different branches of social science, would have enabled to come up with more adequate preview of the upcoming developments. Obviously, the latter is just a hypothesis that can hardly be tested in retrospect.

Anyway, if these considerations have at least some rational grounding then calling knowledge-inquiry into doubt, to put it softly, by Maxwell is well justified. It has to be replaced with another attitude at least as far as social research is concerned. Why not call it wisdom-inquiry?

Now it is high time to take a closer look at wisdom-inquiry. What is it after all? We shall adhere to the definition of wisdom given above that gives a clear distinction. Knowledge-inquiry focuses on the theoretical side, the quest for knowledge as such. There is no pressure from the practice side at all. But as soon as we bring practice into the picture, we have a new quality. We can break through the constraint of theoretical knowledge and aim at a new type of dialogue between humans and nature, the one that acknowledges practice as an essential feature of our connections to the world. It does not really matter whether we decide to adhere to the Marxist or pragmatist understanding of practice here.

Wisdom-inquiry necessarily needs to tackle the great problems of learning. As Maxwell explains, we don't really have two distinct problems here. There are rather two sides of the same coin. They are: learning about the universe and ourselves as a part of it and learning how to become

civilized (Maxwell 2010: 164). Modern science that was started in the 17th century laid the foundation for solving the first part of the problem. The method of modern science was proposed as the means of constantly improving knowledge and understanding of the natural world. This has really happened and has brought about a cascade of technological discoveries or at least developed hand in hand with technological progress. This writer is convinced that without modern science by its side, contemporary technological civilization would not have been possible.

What about becoming civilized? Maxwell holds that we have not succeeded so far. He points out a crucial question: "Can we learn from our solution to the first great problem of learning how to solve the second problem?" (*Ibid.*: 166). The answer is 'yes' but we haven't managed yet. In order to give a thorough treatment of the question 'why', we need to follow Maxwell into the Enlightenment. After all, Enlightenment was supposed to lead the humans into a civilization of a higher level where the social problems of each and every human being were to be brought to the foreground. We have to admit that the Enlightenment managed to go only half way through. Mistakes of reasoning were made. Maxwell calls them blunders. The leaders of the classical Enlightenment have blundered concerning all three main points that have to be got right in order to achieve social progress towards a civilized world. These are the three things:

1. The progress-achieving methods of science have to be correctly identified.

2. These methods have to be correctly generalized so that they become fruitfully applicable to any worthwhile, problematic human endeavour, whatever the aims may be, and not just applicable to the endeavour of improving knowledge.
3. The correctly generalized progress-achieving methods then have to be exploited correctly in the great human endeavour of trying to make social progress towards an enlightened, civilized world (Maxwell 2010: 168).

We are not going to tackle ‘these things’ one after another individually. We shall rather try to get to the heart of the matter from the philosophy of science point of view. The main point cannot be made without referring to Karl Popper. The essence of his critical rationalism is accounting for the progress of science. Science puts into practice the method of proposing theories as conjectures, which are then subjected to sustained attempted empirical refutation (Popper 1959; 1963). Popper’s generalization of the method is his *critical rationalism*. Despite this remarkable achievement of Popper, according to Maxwell, his ideas are seriously defective (Maxwell 2010: 174). Popper has failed to see the problematic aim of science and thus his critical rationalism can be criticized. “It does not make improving aims and methods, when aims are problematic, an essential aspect of rationality” (*Ibid.*: 174). This is the crucial issue in the context of progressing from knowledge-inquiry towards wisdom-inquiry. Maxwell’s point is that Karl Popper

as a ‘philosopher of knowledge’ managed only to go half way through concentrating just on the laws, theories and hypotheses, submitting them to everlasting testing. But Popper did not pay enough attention to the methods themselves. This would be a controversial point unless an important observation. In a really critical and aim-oriented approach we need to accept that not only the methods are problematic but the aims as well. This observation is even more important if we are looking outside of the boundaries of science into the problems of living. Obviously, the aims are problematic not only in science. The New Enlightenment aims rather at solving the problems of living. But we’ll remain with science in the context of turning it into wisdom-inquiry.

Nicholas Maxwell wants to turn the whole building of science upside down making a new foundation of social inquiry and the humanities. Physics will still be there but not the foundation or a model to anything else any longer. By all evidence, some rigour should be lost here. But Maxwell claims that rigour would be gained, that wisdom-inquiry would be more rigorous than knowledge-inquiry has ever been. Without clarifying this point there would be no hope to understand the essence of wisdom-inquiry. Knowledge-inquiry typically demands that emotions and desires, values, human ideals and aspirations, philosophies of life be excluded from the intellectual domain of inquiry. Wisdom-inquiry requires all this to be included (*Ibid.*: 182). It is true that if we want to discover what is of value in life we cannot do without human feelings and desires.

How to accomplish this without ending up with something very individual and subjective without real objective generalizing power? Maxwell believes that subjecting feelings, desires and values to critical scrutiny would help. Obviously, we need to be aware of the difference between feeling good and being good. But what are the neutral criteria for making this distinction. Perhaps, such can be figured out but will they be universally applicable? Maxwell explains further: “Wisdom-inquiry embodies a synthesis of traditional rationalism and romanticism” (*Ibid.*: 182). Thus, Maxwell admits that rationalism in the traditional way, the approach that takes its inspiration from science and the scientific method, is still present in wisdom-inquiry. In addition to that, art should have a fundamental rational role in inquiry. How can this be understood? In Maxwell’s understanding art plays an important role in revealing what is of value, including unmasking false values (*Ibid.*: 183). That’s how romanticism comes in. The point of having the need of an interplay between mind and heart may be well taken but it is still difficult to see a development towards increasing rigour here, at least in the conventional understanding of rigour. Unless, we have just managed to take a fresh and perhaps more discursive (less dark and veiled) look at something that Martin Heidegger has argued for already. The German thinker has stated: “The humanistic sciences, in contrast, indeed all the sciences concerned with life, must necessarily be inexact in order to remain rigorous” (Heidegger 1977: 120). There is

a special kind of rigour present in Heidegger’s approach. But Heidegger does not apply such understanding of rigour to sciences not concerned with life, i.e., physics. In the case of Maxwell, however, we can rather see the attempt to apply the ‘rigour of wisdom-inquiry’ to the whole enterprise of science, physics (φ -science) included. He intends to take a vast step further compared to what Heidegger was up to. The latter seems to have simply accepted the standard empiricist character of mathematical research into nature. Maxwell’s wisdom-inquiry cannot accept such attitude.

Once again it appears that the core of the matter is in physics. In order to implement wisdom-inquiry, the whole approach of doing research in physics has to be revolutionized. Something important in addition to pure rationality has to be accepted by the physicists. Here, the question is not about emotions or desires. Rather, at least some metaphysical assumption about the world has to be accepted before putting empiricism into practice. Making this crucial step that even metaphysically minded Heidegger did not notice seems to be the Gordian knot of the revolution endorsed by Maxwell.

Conclusion

Our conclusion is short. The aim of science can be knowledge if we take the traditional narrow look at science limiting it to physics-likeness (φ -science). Knowledge is important but it wouldn’t help us to address properly, not to speak about solving, the problems of living – the practical

problems of our concern. In order to make science, this wonderful creation of the human mind, something of real benefit

to human existence, it has to function as wisdom-inquiry rather than knowledge-inquiry.

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MOKSLO TIKSLAS – ŽINOJIMAS AR IŠMINTIS

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Santrauka. Mokslo tikslas paprastai išreiškiamas siejant jį su žinojimo siekiu. Šis tikslas juntamas taip stipriai, jog kartais net ir tipinis mokslinis tyrimas vadinamas į pažinimą orientuotu tyrinėjimu (angl. *knowledge-inquiry*). Žinojimas savaime nėra blogas dalykas. Ypač kai galvoje turima aukščiausioji žinojimo kokybė – mokslinis žinojimas. Tačiau šiandieną mokslas turėtų kelti aukštesnius tikslus – peržengti žinojimą kaip galutinį tikslą ir siekti išminties. Taip atsiranda poreikis vietoje į pažinimą orientuoto tyrinėjimo vykdyti į išmintį orientuotą tyrinėjimą (angl. *wisdom-inquiry*), kaip siūlė Nicholas Maxwellas. Norint užtikrinti sėkmę, pirmame plane turi atsidurti ne žinojimo, bet gyvenimo problemos.

Pagrindiniai žodžiai: Nicholas Maxwell, į pažinimą orientuotas tyrinėjimas, į išmintį orientuotas tyrinėjimas, Rein Vihalemm

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