

A SECOND ORDER THREAT POSED BY AI ON PROFESSIONS **THE AI-ERA SUCCESSION GAP PROBLEM**

BY **GÁBOR HANÁK**



Artificial intelligence (AI) has already made a strong impact in most areas of our lives and almost all *professions*; and it will make even more in the near future. By *profession*, I refer to fields requiring specialized credentials, life-long learning, a code of conduct and adherence to other *professional* and practice standards, and in many cases, practitioners belong to an organization based on such foundations — such as -among others- medical doctors, lawyers, architects, and -not least- my own profession, actuaries. In essence, there are no exceptions to the fundamentals, only the specific applications differ in terms of the subject matter. >

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Before AI, and even today, albeit to a decreasing extent, practitioners of certain professions performed many tasks that could be easily or not too hardly replaced by an AI application.¹ For example, if AI applications can ‘learn’ all the relevant medical/legal documents of a topic without any difficulty and very quickly and can even display them in their context with regard to a specific medical/legal case, as they do, then it is clear that a large part of the work of medical doctors/lawyers can be replaced by simple AI applications. This example is relevant to all *professions*. Recently, one of our actuarial task forces asked our AI application to explore the internal consistency problems of a planned actuarial publication on AI, and consistency problems in relation to a set of existing relevant documents; it did so, and the AI application gave us a serious task to decide with natural intelligence: which of its suggestions are legitimate and which are not. Such AI assistance can contribute greatly to the quality of the final publication. This type of AI activity is not limited to the actuarial *profession* either: it can be applied to essentially any field.

However, the issue of liability raises a serious problem: who is responsible if something goes wrong? Is it the developer of the AI application, its implementer, or its user, or within the latter, the one issuing the prompt to the AI, or the user of the AI's response, message, or choice? Has the developer of the AI application provided the user with information that makes it clear under which

preconditions the application may be used, and if so, has the user followed these instructions? And if so, does the adaptive and autonomous model at the heart of the given AI application really work as designed and expected?

To comply with liability and other related *professional* norms, such as the code of conduct, the actuarial *profession* has developed certain standards and educational materials for the responsible use of AI; I believe that all *professions* need to act similarly. Our *profession's* answer to the question of liability is absolutely clear: the ultimate responsibility must be assumed by the *professional*, they cannot get rid of it by saying they only used AI.

As we'll go through the thought process of the article, we'll see how the liability issue is explicitly connected to the succession gap problem of how newcomers of a *profession* become experienced practitioners under the AI era; and who would assume full responsibility for *professional* work products.

Medical/legal experts say that a good doctor/lawyer (or from our perspective: a *professional*) has certain experiences that are essential for making the right decision. We, actuaries, call this *professional judgment*. *Professional judgment* means the judgment of the actuary based on actuarial training and experience; i.e., applied in compliance with the appropriate standards of their *profession* and based on training and ➤

¹ Throughout this article, I use 'AI application' to refer broadly to AI-powered applications, tools, systems, models, agents, etc.

‘ ***Tackling the succession gap problem outlined above should be a high priority of each individual profession.*** ’

experience. *Professional judgment* is not an ad-hoc decision made based on mere ‘gut feelings’, but the result of an analysis in which the *professional* takes into account all relevant information, including the training completed in order to enter and continue to belong to the *profession* and the experience accumulated during their practice of the *profession*. These experiences are usually widespread. They include lessons learned from both successes and failures; for example, going through a thought process like ‘in a very similar case, I made a decision that, based on later observations, was successful/unsuccessful; but let’s also examine the similarities and differences between the current case and the one at the time, etc.’

According to my own experience, AI is currently not capable of the skill to make the right *professional judgment*. The decisions of the current AI applications, which I understand to a certain extent, are rather mechanical, they make them based on certain algorithms that do not consider *professional* standards such as ethical/behavioural requirements.

The above implies that for quite some time, at least until AI is able to apply *professional judgment* reliably, responsibly, and in accordance with *professional* standards, there will be a need for professionals. Of course, *professionals* who can apply AI properly and responsibly.

At the same time, it also follows from the above that the *professionals* who will be needed can

only be ‘born’ as a result of a longer process, driven not only by training but also by the acquisition of a long trail of experience; and those inexperienced *professionals* who do not yet have this skill will not be needed in their traditional numbers, or will only be needed in significantly reduced numbers, because a large part of their work will be replaced by AI.

Now the question arises: how will there be a proper succession of *professionals* with the skill to make *professional judgments*? If there is not such a great need for inexperienced *professionals*, but there is a need for relatively large numbers of experienced *professionals*, then how can this path from inexperience to experience be bridged? We are faced with a new situation, because the process of normal *professional* development - in a somewhat simplified way - has looked something like this until now: an inexperienced *professional* enters the profession; they perform all kinds of activities during which professional judgment is not required, in a sense they serve those who already possess this skill, who need the preparatory work, that inexperienced people do, to apply their professional judgment. During the experiences of this period, they continuously acquire the skill to apply *professional judgment*. I call this *succession gap problem* a second order threat as it is not a direct but a consequential threat that will make its impact only over a relatively longer period of time after the first order threat of diminishing the influx of inexperienced *professionals* have already made its impact. >

It also seems quite natural that in the age of AI, there will be a need for *professionals* who have not existed before. Those who ‘drive’ individual AI applications; those who invent, develop, validate, test, implement, continuously monitor their proper functioning, intervene when necessary, and initiate the necessary modifications or the elimination of models: in other words, those who manage and control the entire life cycle of individual AI applications. My expectation is that these *professionals* will be a tiny minority compared to the number of *professionals* currently employed, and they will also be mainly among the more experienced. (I know there are those who say that nothing is new under the sun, we have seen many such things before; computers and the internet came along earlier, and many said that the end was here, but the end has not come. I still think that the age of AI will be qualitatively different from previous technological innovations: here we are faced with a **qualitative** challenge to human capabilities such as the adaptiveness and autonomy of the advanced AI applications, compared to some simple **quantitative** improvement such as increased processing speed.)

Of course, one can trust that the process of AI’s spread will be so rapid that by the time *professionals* capable of applying *professional judgment* retire or exit the *profession*, AI itself will be able to take over this role. But what if that is not the case? How can the appropriate succession be achieved?

I am convinced that tackling the succession gap problem outlined above should be a high priority of each individual *profession*.

Without jumping into very concrete potential solutions on **how** *professions* might address the succession gap problem, I’d mention two potential routes forward. One might be that *professional* bodies consciously strengthen the importance and successful acquisition of *professional judgment* for their inexperienced members. Another -maybe related- route might be that such organizations build their pool of members so that a streamlined mentorship program would be applicable to all members until they reach the level that is ranked highest in the *professional* body. <

Call for Discussion

This article is intended to provoke discussions. The reader is encouraged to challenge any or all of the ideas in the article, and/or add their own ideas (especially if they believe they know the answer to the final question about the *succession gap problem*) and send their comments to the author at gabor@hanaks.hu or to the editor of The European Actuary magazine at info@actuary.eu.

Note by the author: The first draft version of this paper has been checked by an AI application (Claude). I also requested opinions of the Actuarial Association of Europe’s AI and Data Science Working Group members. Considering the comments, I changed some parts of the paper to arrive at its present version. Nevertheless, the responsibility for the paper lies with the author.