Chronospédia: why does (almost) everyone support an obviously bogus project?

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I have decided to write this short note because there is something wrong with the "Chronospédia" project. To put it briefly, the main claims of the project are false, and yet there is a wide support for this project. I will try to explain why this is so.

1 What is Chronospédia?

I will not describe the Chronospédia project in detail. One can have a look at its official site[1] and at the extensive analysis I have recently published [3]. To put it briefly, Chronospédia is a project largely based on creating 3D models of clocks, but also whose claimed purpose is to save the horological know-how. This project is based on the work of the clock restorer François Simon-Fustier's team, who started to work on the use of the *SolidWorks* software around 2015. Initially, Chronospédia was only the name of a horological dictionary on Simon-Fustier's site,[2] but the name was used around 2020 to cover also the 3D modelling activity.

2 Chronospédia's main claims

The main claims of Chronospédia are that 3D is necessary to save the knowledge about clocks, that everything is digital now, and that there are basically no sources, no plans, etc., for clocks. Simon-Fustier's aims to fill

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[1] https://chronospedia.com
[2] https://www.horlogerie-ancienne.fr

this gap. Simon-Fustier claims that if nothing is done to document clocks, no one will be able to repair them in 2030, in six years from now.

Another important claim is that the Chronospédia project is "open-source." At least, this is what appears in some documents, such as the description of the project published in the French "Horlogerie Ancienne" journal in 2022 (figure 1).
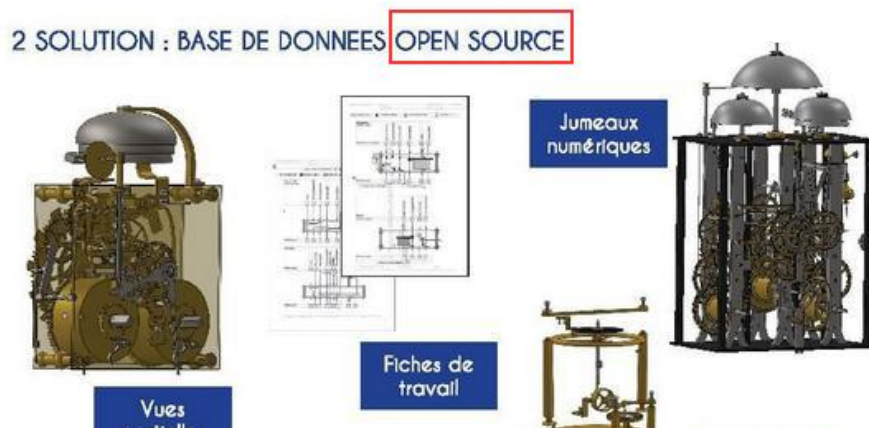

Figure 1: The "open-source" claim by Chronospédia in 2022.

This claim can be read again in an interview given by Simon-Fustier on a French television channel in February 2023. There he stated that "Chronospédia is an entirely iconoclastic project" (whatever that means[3]), and that "it will be an entirely open-access area." He stressed that the "open-access" feature is important.[4]

However, the open-access claim seems to have vanished in recent documents such as Boudart and Protassov's communication in late 2023 [1]. And in his recent communication at the NAWCC Convention, Protassov only said that the access to the site is free, and he made a number of incorrect statements on time and on 3D models, something to which I'll return later in this note.

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[3]Normally, "iconoclastic" means "criticizing or attacking cherished beliefs or institutions," and Simon-Fustier may have had an entirely different idea of the meaning of that word. Perhaps he meant to say that his project is revolutionary. Perhaps he meant to say that he was breaking the belief that nothing could be done to save horological know-how. But these are merely guesses.

[4]See https://www.youtube.com/watch?v=QwK9qf0D4VE

3 Support for the Chronospédia project

The Chronospédia site mentions an impressive number of museums and companies supporting this project. For instance, it is supported by the French INIST Institute, the University of Grenoble-Alpes, the AFAHA (French association of horology), the Musée du temps in Besançon, the Musée International d'Horlogerie in La Chaux-de-Fonds, the castle of Vaux-le-Vicomte, and many others. It is also supported by the French Ministry of Culture and the Dassault Systèmes company. Support seems to be growing each day, and the project will probably be endorsed by the NAWCC, the Antiquarian Horological Society, and other horological associations.

4 But … the claims are false

I consider the main claims of Chronospédia to be false. I may be the only one defending this position, but I have good reasons to do so. Before I explain my position, let me describe my context first. I happen to be a computer scientist, but as a side activity, I am also an independent researcher in the history of technology, and in particular in horology. I have been seriously involved in the study of astronomical clocks[5] and also in the scientific supervision of the Strasbourg astronomical clock. During the past twenty years, I have also examined about a thousand tower clocks, including the destroyed clock from the Notre-Dame cathedral in Paris. I am therefore well aware of the amount of abandoned clocks in churches and of the dangers they are facing. Many have vanished, some have had parts stolen, and practically none is properly documented. These are orphan clocks, as no one cares for them in France.

I also happen to have an interest for 3D and I have taught and developed 3D solutions for various personal projects. In 2020, I made a 3D model for the Paris Notre-Dame cathedral clock and the model was made available for free to all online. I have also created an application for this clock on Android in 2021 and I supervised another one on augmented reality (AR) with a Microsoft Hololens headset in 2022. Moreover I had the entire Notre-Dame clock printed in 3D in 2021. I am therefore quite familiar with 3D development, 3D theory, as well as the needs of researchers in horology. However, I have to stress that I am not a competitor to Chronospédia. I have no aims to create many 3D models, and I am happy if others do so, provided it is useful and it is well done. But I also

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[5]See for instance my contribution on 19th and 20th century astronomical clocks in the *General History of Horology* published in 2022 by Oxford University Press.

intend to reclaim the authorship of some innovations, either for me or for others, as Simon-Fustier's team was for instance not the first one to apply 3D to clocks (nor was I), nor the first one to use virtual reality on a mobile phone, nor the first one to use augmented reality for that purpose.

Now, let's go back to Chronospédia's claims.

4.1   Chronospédia is not open source

I don't know if the "open-source" claim is still defended by Chronospédia, but if it is, the sheer truth is that *Chronospédia is not providing a single 3D model*. Simon-Fustier's team has made models for the tower clock described in Diderot and d'Alembert's *Encyclopédie*, for the tower clock in the Vaux-le-Vicomte castle, the electromechanical clock at the Cluses city hall, the two large carillon clocks at the Mafra palace in Portugal, and a few others, but not a single one of these models has been made publicly available. The Chronospédia site writes that a model can be made available after the demand is examined, but that means that some people can have the model, and others cannot. This is not fair and is an open door to discrimination.

It is also interesting to observe that the Chronospédia project is very wary of some "open" software, as it fears that if a third party uses such a software, it will limit the control Chronospédia will have on it. This is made clear in the contract with the city of Besançon, who owns the Musée du temps [2]. Obviously, Chronospédia doesn't want to provide 3D models, but if it makes a model available, it doesn't want others to produce something that could limit Chronospédia's control.

4.2   The models are not stored in a perennial way

A side claim of Chronospédia is that the models are stored in a perennial way. What the authors of Chronospédia mean is that the source files (for instance for *SolidWorks*), as well as the files in an exchange format such as STEP, are stored in some database[6] such that there is a guarantee that they will still be available in the future. However, by doing so, these files will only be available to a handful of persons, not to the general public. But this is not the only problem. What should be preserved is not a model alone, but everything that surrounds this model, in particular its manufacture,

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[6]The database that Chronospédia plans to use is the 3D heritage archive `https://3d.humanities.science`. However, at the time of writing (July 2024), no model produced by Chronospédia seems to have been archived there. Moreover, this archive is primarily meant for 3D heritage cloud points, and does not seem to be best suited for CAD models.

its history, the data it uses, the methods used to make it, and so on. And the best guarantee for preservation is that these informations are made available for free to all.

4.3 The 3D models are very low-level

I have closely followed the rise of Simon-Fustier's projects since 2015, ever since I heard of his 3D model of the *Encyclopédie* clock. It became early on clear that his team is only using 3D at a basic level.[7] The software used is *SolidWorks*, and there does not seem to be a real 3D knowledge, other than that of the features of the software. I doubt for instance that Simon-Fustier's team has a great knowledge of advanced mathematical concepts in 3D geometry, let alone in complex 3D curves. His approach is therefore very different to mine. Some of the 3D models exhibit problems which are caused by a lack of methodology. The models are not sufficiently parametric, and often the work of Simon-Fustier's team merely amounts to a transcription in the software of measurements taken on the actual clocks. This is of course not sufficient. This may change in the future, but first it appears that probably ten years of 3D models have been constructed with a flawed methodology, and second, even if the methodology is improved, it is unlikely that the first models will be corrected anytime soon.

My conclusion is therefore that Chronospédia has an immature approach to 3D, and that the people behind the project falsely take it for granted that making a few 3D models is a "proof of concept." I consider that most needs of 3D are not answered by Chronospédia's approach.

4.4 The models can not freely be used as a new foundation

In the current configuration, one of the benefits of an "open-source" project will be lost, namely that it will in general not be possible to build upon existing models. In contrast, anyone can download the entire model of the Paris Notre-Dame clock,[8] and can, if he/she wishes, build a new animation from the model made available. Some parts could also be replaced, if necessary. None of this is possible with the models kept by Chronospédia.

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[7]In fact, when I made some statements to Simon-Fustier about 3D in early 2017, he stopped corresponding with me and refused to answer any question, lest I bow to his credentials. Two years later, Simon-Fustier tried to intimidate me by writing to my employers, and he even sued me.

[8]The files can be found at `https://github.com/roegeld/notredame`.

4.5 Chronospédia wants to control research

A side effect of the above is that the Chronospédia team obviously wants to keep control of the models, but in doing so, it is trying to control research. However, research should be free and Chronospédia's position is incompatible with the principles of scientific research. Consequently, certain investigations will not take place, because researchers will not accept Chronospédia's conditions.

This attempt to control research should be put in a broader perspective. One should first be aware of the methods used by the Chronospédia team to expand its control not of research, but of the market. Chronospédia doesn't want anything less than to catch the entire market of 3D modelling, not for the purpose of heritage preservation, but for economic reasons. This can be seen through the agressive propaganda, press releases, facebook, linkedin and other private announcements on mailing lists. It can also be seen through the efforts put into eliminating dissenting voices such as mine, even sometimes resorting to intimidation, threats and lawsuits. Chronospédia's strategy works because it largely has an audience of persons who know little about the priorities of horological conservation, and little about 3D development. The Chronospédia project, with its pyramidal structure (one person controlling all 3D models and actually producing no research), is not far from a technical dictature. It is a very authoritary structure, and one cannot stop from comparing the expansion of Chronospédia with the expansion of the far right in France and other countries. The French Universities are currently very worried about their future, because the far right, which may well take the power, gave little guarantees on the freedom of research. Yet, with Chronospédia, no one seems to be worried!

4.6 The distortions of titles and diplomas

There is a very misleading claim underlying Chronospédia's approach, namely that Simon-Fustier is the best clock expert or restorer in France, because he is the only one to have a *"brevet de maîtrise supérieur"* in horology, and also the only one to have been named *"maître d'art"* in horology, which is true (as of 2024). These titles are used to give credentials to the Chronospédia project. The problem is that the first title is not a measure of scientific or technical knowledge, only a measure of Simon-Fustier's management abilities in his workshop. And the second title was given as a way to encourage transmission of knowledge, through a special part-

nership between a master and a pupil.[9] There has never been a national competition for clock restorers, and it is possible that Simon-Fustier was the only one to apply. That does not make of him the best clock restorer in France. Yet, since the titles have been given, they are used as levers to open other doors. It is curious to see how no one examines the situation closely, and in particular how no one is bothered by the fact that the project Simon-Fustier and his pupil committed to when he obtained the title of "*maître d'art*" in 2019 was never completed, although it was supposedly a three-year project. It is also to be noted that the traditional way for a craftsman in France to prove one's abilities is to compete in the competition of "*Meilleur Ouvrier de France*," (= best craftsman of France) which Simon-Fustier has never done, but even that is not a general competition, as you only become the best of those who applied.

4.7   3D is not as necessary as Chronospédia claims

One of Chronospédia's claims is that 3D is needed because there are no plans for clocks. But this is really a flawed reasoning. There are not many plans, this is true, but a restorer rarely needs plans to work on a clock. That does not make a necessity of 3D. It seems much more that Chronospédia has a conclusion to defend, and it is trying to find reasons to justify the project.

In fact, at the recent NAWCC Convention in Chattanooga, Protassov also tried to give another justification for 3D, namely that now everything is digital and must be digital. According to him there are no longer books, and books are dead. Well, perhaps Protassov doesn't know that there are many discussions about the use of digital media in school and that traditional ways of teaching still have a point. And one should perhaps also have a look at the book I have recently published on the paintings of the Strasbourg astronomical clock.[10] It will then be apparent that a large number of my sources are not available digitally, or at least not available for free, so that one still has to resort to books and articles for any serious re-

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[9]For more details, see `https://www.maitredart.fr/candidature`. The conditions to be awarded this title are that the master is the owner of a specific knowledge (in this case mostly the use of 3D modelling for clocks), that he commits the transmission of the most complex know-how of its craft to its pupil, and that a detailed transmission program is elaborated. In this case, the specific 3D knowledge was asserted in 2019 by a jury where members were neither involved in horology, nor experts of 3D. The selection was therefore necessarily based on outside sources, in particular on previous titles. For the record, I give here the names of the members of the 2019 jury: David Caméo, Isabelle Chave, Marie-Hélène Frémont, Florent Kieffer, Hervé Obligi, Élisabeth Ponsolle des Portes, Felipe Ribon and Alain Soreil.

[10]See `https://roegeld.github.io/stimmer`

search. Protassov's justification for the use of 3D therefore falls short and seems to be a mere artificial reason to support the Chronospédia project.

4.8 Chronospédia hasn't yet documented any know-how

Another major claim of Chronospédia is that it will help save the horological know-how. The truth, however, is that a lot of this know-how is long lost. For instance, the use of a number of machines is very little documented, and sometimes museums have some machines without knowing for sure what they were used for. However, for the usual activity of a restorer, there are documentations in books, and there is still a living know-how. What should then be done is to create movies documenting the various things that a restorer does, the tools he uses, etc. 3D might be used at a later stage, but the first priority should be to document the work of traditional restorers, and that does not involve 3D. Surprisingly, the Chronospédia project doesn't contain any such film, and does not even plan to provide such films. Yet, a simple idea would be to take books such as Schulz's *Horloger à l'établi*, Jendritzki's *manuel suisse de l'horloger-rhabilleur*, or others more aimed at clocks such as Matthey's *Pendulier neuchâtelois* and illustrate them with short movies. There is therefore a contrast between Chronospédia's claims, and what it actually provides. It is in fact surprising to see that one of the clockmakers associated to the project, Michel Boulanger, was involved in the early 2010s in a movie documenting the making of a watch,[11] and yet this movie has never been made freely available, although its purpose was exactly that of preserving the horological know-how. Why not provide this movie on the Chronospédia site?

Simon-Fustier is also claiming that recording sounds is useful to preserve the know-how. Sounds may be part of the know-how, but I believe that there is more to preserving than recording sounds. Simon-Fustier somewhere gave the example of the sound of a chisel and that the wrong use of a chisel results in a different sound. This may be true, but shouldn't then one also record the wrong sounds, and try to analyze scientifically the properties of the "right" sound? None of this is done. In fact, there is no firm research, nor publications, associated to the Chronospédia project, neither on sound nor on anything else.

4.9 Summary

In its current state, the Chronospédia site does not contain any 3D model. It only contains some videos and viewers for some models, such as a Seth

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[11]https://timeaeon.org/fr/projets/naissance-dune-montre

Thomas Clock. However, these viewers are merely standard viewers and do not provide any technical details such as teeth counts, which are things that I provided in my Android application. In other words, the 3D models are only very poorly accessible, when in fact it would have been possible to do much more. One reason for this is that very little effort was put into 3D development. The 3D models are merely converted to some format which is used by a standard viewer. Much more should (and could!) have been done.

In its current state, the Chronospédia site also contains nothing about the horological know-how. The clocks for which videos or viewers are available are not properly documented. For instance, there are no PDF descriptions of the *Encyclopédie* clock, of the clocks restored in Cluses, Mafra, and others. It seems that all the effort is put in 3D, and that the badly needed technical descriptions are entirely dropped. There are also no photographs of these clocks.[12]

As I wrote in my extensive analysis [3], not only does the Chronospédia site have many shortcomings, but the stress it puts on 3D will certainly have devastating consequences on some parts of the horological heritage which will be even more neglected. This is abolutely dramatic! It is moreover surprising that some clocks are dismantled for 3D, without properly documenting them in the first place. 3D should never come first, except if 3D is used for scanning only, which is obviously not the case in the Chronospédia project.[13]

5   But why doesn't anybody seem to care?

Yet, with all the obvious shortcomings, including the absence of any 3D model, how come Chronospédia gets the support of so many museums and institutions? In fact, there will probably be more, and I wouldn't be surprised if the authors of Chronospédia receive the Gaïa prize, the highest prize in this domain. I will not be surprised, but I will consider it a sad moment in horological history.

I mentioned above the problems of some of the 3D models, in particular the lack of a parametric approach. Unfortunately, only very few people

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[12]Here, too, it is interesting to recall that Simon-Fustier refused to provide the restoration report of the clock he restored in Cluses, and he also refused to provide the folder of 500 photographs associated to the project, although I eventually obtained both.

[13]However, the Chronospédia project is trying to run on all waves and there is a PhD student currently working on trying to reverse engineer cloud points of a clock into a 3D model with the use of AI. Chronospédia is using the current buzz words such as AI (Artificial Intelligence), VR (Virtual Reality) and AR (Augmented Reality), etc., in order to capture its audience. And it works.

will notice such flaws. One of the main reasons why the Chronospédia project gets so much support is that most people involved in this project do not know about the priorities of horological heritage. No member of the steering committee has been involved in a large inventory such as the tower clock inventory on which I have been working for more than twenty years. No member of the steering committee knows what it means to survey clocks, to take measurements, to analyze their functions, to document them, and to publish about them. In fact, no member of the steering committee, including the two museum curators, the heritage curator Jean Davoigneau and even Simon-Fustier himself, have ever published a technical description of a clock. The scholarly situation is even worse in that Simon-Fustier, the main person behind Chronospédia, hasn't published anything, except a general description of the Chronospédia project in 2022.

So, basically, of all the people involved and supporting the project, no one knows about the inventory of clocks, and very likely no one knows about the real priorities of horological heritage. The real priorities are first to save and document the clocks which are in danger (and this includes the tower clocks), and second to improve the documentation of the horological know-how. None of these priorities require 3D models. Models can be made later, they can help explain and document objects, this is true (and this is what someone like Florent Laroche is doing), but this should only come later, not first. Putting 3D first is taking the problem in the wrong way. But who will notice if no one is really involved in saving the horological heritage? Who will notice if everyone blindly believes that the choices of Simon-Fustier and Protassov (who also hasn't published any technical description of a clock) are the right ones?

Another reason why museums, other institutions, and also clock restorers and other clock amateurs support the Chronospédia project is that they are in awe with 3D. Simon-Fustier, or his partner Protassov, manage to mesmerize their audiences and everybody buys what they say. But museum curators, and other persons, including restorers, very rarely know much about 3D modelling. And even if they have used a software such as *SolidWorks*, they have probably never had a reason to use an exchange format such as STEP, let alone to look inside. Who among the museum curators will know the differences between the STEP, OBJ and STL formats? Probably none. That explains it all. And who will notice the shortcomings if the Chronospédia team uses all the "right" buzzwords? The Chronospédia project is working with audiences that know very little about the horological heritage priorities and also very little about 3D. And therefore they find it easy to support the project.[14]

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[14]It is interesting to observe that the steering committee staunchly refuses to communi-

There is another project which is widely supported by horological companies, namely "The Watch Library."[15] But this is also strange. Why would commercial companies support a project that is aimed at providing documentation for free? Some of these companies might also support the Chronospédia project. But the fact is that such support conflicts with the traditional approach of clockmakers, watchmakers and even clock and watch restorers, namely to keep secrets. It is interesting to observe that the beautiful animation of a Habrecht clock on the first page of the Chronospédia site was not made by the Chronospédia project, but was even made in part by a restorer who is a staunch opponent to openness. And the authors of that animation cannot even provide a 3D model, because there is none![16]

6   Conclusion

I hope that this short note helps clarify why I am not supporting Chronospédia. Not only is it a flawed project, it is basically useless for researchers, but it is also a closed project, with many shortcomings. And it may very well be much more detrimental than beneficial to horological heritage. I know that because I am involved in saving that heritage, and I am also involved in 3D development. Not many people can claim both.

The museums, curators, restorers, and others who seem to blindly support Chronospédia should realize all its shortcomings and should realize that there are a lot of better solutions available. First, models can be made available entirely, either on the Chronospédia site, or on some dedicated site such as *Sketchfab*[17]. Second, making the models available will make their archival perennial, and it will allow a large community to develop new uses of the models. Third, Chronospédia should *really* provide elements of the conservation of horological know-how, in particular in the form of video tutorials. And finally, Chronospédia should make sure that its emphasis on 3D is not detrimental to areas which should have a higher

cate on the project. Neither Simon-Fustier, nor Protassov, nor Laroche, nor Davoigneau, nor the museum curators, nor the director of INIST, have followed on my questions and remarks. But some of them, including Laroche, have threatened to sue me. Not a very scientific approach!

[15]https://watchlibrary.org

[16]However, when Protassov described this animation at the June 2024 NAWCC Convention, he incorrectly said that it was made from the model (but there is no autonomous 3D model, only a Blender description of the clock), and he incorrectly stated that the author of the clock constructed the Strasbourg astronomical clock a few years *later*, when it is actually the opposite.

[17]https://sketchfab.com

conservation priority.

References

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