An Investigation
into the Pendulum UFO

An analysis of a Billy Meier film

By: Rhal Zahi.

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Contents

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Introduction

Occam's Razor:

Among competing hypotheses, the hypothesis with the fewest assumptions should be selected.

Fig. 1 – UFO above a tree. From Billy Meier's video

Almost everybody who watches the Billy Meier *Pendulum UFO* video for the first time thinks what they are seeing is a small model, hung from a string, which Meier moves in front of his camera. It seems to be the simplest explanation, with the fewest assumptions. However, when you look at the fine details in it, you start to wonder how difficult it would be to duplicate.

This movie is the first one Meier filmed, on March 18, 1975, on a cold and hazy, or snowy, evening. It is known as both *The Pendulum UFO* film and the film, *A UFO Circling a Tree*.

Several skeptics have tried to reproduce it, or provide some explanations, but they have been ignoring some of the most important details. Also, I have found in Billy Meier's case that something that apparently can be explained with simple descriptions based on first impressions is in fact not that simple after conducting a detailed

analysis. Like the WCUFO analysis, there are clues revealing the case is not as simple as one might at first think.

In this document I will show the results of my video analysis made with simple computer tools available, and check the feasibility of doing it with a scale model, taking into account some physical aspects of the object's movements. I also discuss five aspects that show a simple model explanation cannot provide the answer to what we see in this film.

Also covered will be some of the findings of Bruce Maccabee and the tests of Phil Langdon, and some of the comments of Professor Jim Deardorff. Findings of my own will be shown that again indicate the model hypothesis cannot explain what this video really shows.

The video details

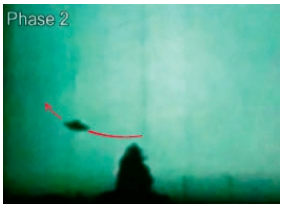
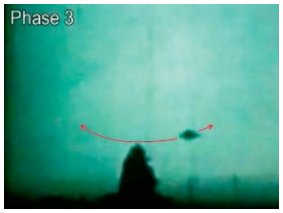
I have divided the dancing UFO activities into the 11 phases explained below. It will help later when checking the "Model" versus the "UFO" hypothesis.

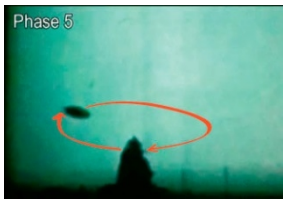
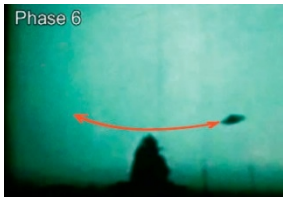
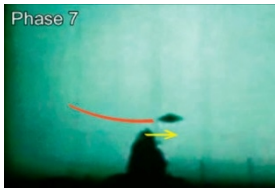
The object moves like a pendulum (planar, circular, and spiral pendulum – See the Appendix), but the period of its movement changes constantly. The period is the time required to do a cycle, for example, going from the left to the right and then coming back to the left, or the completion of a circle. These changes in the time period are significant; they indicate that the length of the pendulum is continually changing. Maccabee found these differences in his investigation, which, upon reading, gives the impression that he assumes Meier used a pole (like a fishing rod) from which to hang the model, and the variations in time cycles are due to the continually moving supporting point (the node of the pendulum), or by the pulling of a cord. The "fishing rod" method was found to not explain some of the movements we see in Meier's video. In my study some differences were found in some of the time values indicated by Maccabee, and so it is assumed that he did not do the analysis with a computer tool as I did in this investigation. In this investigation most of the oscillations were measured during the different phases in the videos available.

Phil Langdon made a very good simulation by constructing a model showing how it can approximate Meier's film. However, he did not conduct an analysis of the physical aspects as Maccabee did, and he ignored a few important details. In addition, Maccabee did not (as far as I know) conduct a practical test to determine how easy or difficult it is to

create this dancing UFO simulation. Therefore, neither the Langdon nor the Maccabee investigations offered good explanations as to how the model hypothesis can be consistent with the variations in the object's movements – the different time periods. They also do not adequately explain the fact that the "model" moved the treetop without touching it, or the variations in the blurriness of the dancing object image at different distances from the camera. Also, as will be explained in detail, the two jumps that the UFO conducts cannot be explained away by simply saying that Meier cut the film roll.

The following tables show the 11 phases I defined, the time periods I measured in some of them, and the equivalent length of the pendulum.

Phase	Description	Image	Pendulum Period (seconds)	Length of pendulum m/ft
1	The UFO is static for 23 seconds.			
2	It moves to the left as if somebody is pulling it.			
3	It moves, to the right and left, twice, such as a free planar pendulum.		5.6 5.2	7.8/25.5 6.7/22.0
4	It reduces speed quickly and stays above the tree. It looks like a pull from the right stops it.			

Phase	Description	Image	Pendulum Period (seconds)	Length of pendulum m/ft
5	It moves in counterclockwise circles around the tree (as seen from the top), initially at a short distance, then it increases the diameter of the orbit. (Conical pendulum movement)		4.9 5.0 4.4	6.0/19.6 6.2/20.4 4.8/15.8
6	It gradually switches to a planar pendulum movement, left to right, similar to Phase 3.		4.6 5.0 5.2 5.6	5.3/17.2 6.2/20.4 6.7/22.0 7.8/25.5
7	The UFO moves the treetop without touching it.			
8	Immediately after it moves the treetop, it quickly changes direction to a perpendicular plane, moving back and forth instead of left to right. It looks as if somebody pulled it from behind the camera.			
9	It continues moving back and forth. A couple of times it jumps when passing above the tree. It looks like two cuts in the roll of film.		5.0 5.4 5.4 5.4	6.2/20.4 7.2/23.7 7.2/23.7 7.2/23.7

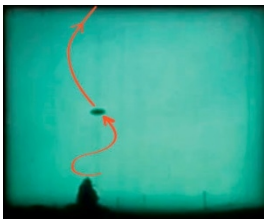
Phase	Description	Image	Pendulum Period (seconds)	Length of pendulum m/ft
10	It decelerates as it approaches the tree.			
11	It departs, moving in a spiral pendulum path while ascending.		5.5 5.2	7.5/24.7 6.7/22.0

Table 1 – Billy Meier video phases, with pendulum period measurements.

In this analysis the video used is from different sources: Michael Horn's movie, *The Silent Revolution of Truth*, and a video on the FIGU web site (Swiss) in the videos section. The original video is from an 8 mm film projector, at 24 frames per second (fps). The recordings are from cameras, filming at 30 fps, from the images projected on a wall. The different frame rates cause an "effect" in the final video that we comment on in this document.

In all the videos available, the time periods of the different movements were found and listed (Pendulum Period in Table 1). To accurately measure these periods, the video editing tool "Pinnacle Studio, Ultimate Collection" was used, but one can obtain the same results with any tool like this (for example, Adobe Premier). If the tool can do a frame by frame review it will be useful to confirm the details in the video.

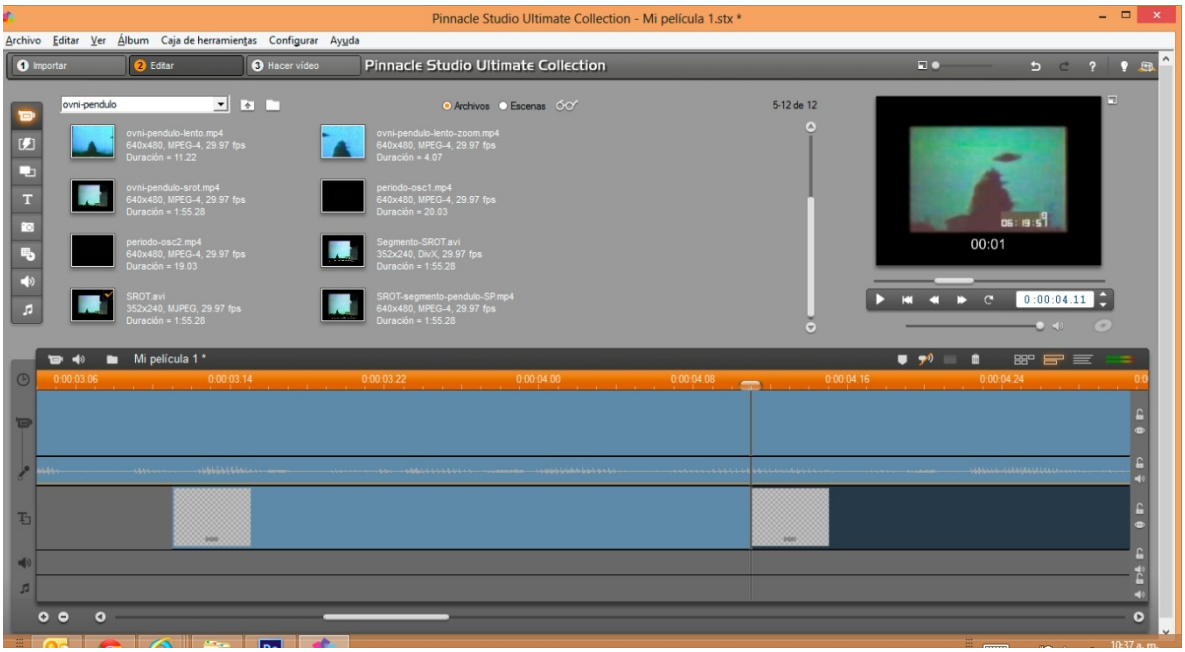


Fig. 2 – Pinnacle Studio tool used in this analysis.

In order to measure the period of oscillation, control points were defined by looking at each frame, to determine the exact moment (or frame) when the UFO was at the beginning of the cycle (like the leftmost position), and then the whole movement until the UFO comes back to the initial position. In some cases these control points were found within a range of 4 to 6 frames (0.13 to 0.20 of a second). My analysis determined that the error in measuring these periods was around 0.1 of a second, and in the worst case, where it was difficult to determine the control point, an error of 0.2 of a second. (*Period* and pendulum formulas, details, equations and calculations can be seen in the Appendix on pages 42-43.)

So, the values indicated in the table are very precise and show noticeable variations that in the hypothesis of a "model", in a pendulum movement, mean that there would be important variations in the length of the pendulum; the longest distance was 7.8 meters (25.5 feet) and the shortest one was 4.8 meters (15.8 feet). This makes a difference in the length of the pendulum of 3 meters (10 feet). This value is significant and it creates a singular difficulty for the "model" theory.

Now, taking into account that Meier's original movie was done with an 8mm film camera that typically records at 24 frames per second, if we record from a projection of this film, normally 30 frames per second is used (a default in most video cameras). This difference of frames per

second, introduces an effect that has to be considered when analyzing this video.

The top of figure 3 represents the 24 frames of Meier's original movie, and the bottom the 30 shots a modern video device. Each exposure is typically at 1/100th of a second or 1/300th of a second. It was noticed in the video used for this analysis that some frames repeat and that they follow a pattern. The same pattern can be explained by looking at figure 3. We may notice that every 5 frames there are 4 frames from Meier's video, but the fifth one is the same frame as number 4. So there are repeated frames in this sequence, each marked with a red dot in figure 3.

Also, occasionally overlaid frames were observed. These are exposures that capture part of one frame from the original film, and part of the next one. Meaning, if an exposure lasted 1/100th of a second, part of this time captures the image of one frame in Meier's video and another part of the next frame. The result is a combined image of two contiguous frames. Overlaid frames occur occasionally in the video, not in Meier's original film, but in the recording made from the original. There are no contiguous frames with overlaid ones. Also it is not possible to find overlaid frames close to each other in this pattern. This is important when analyzing the "jumping" of the object later in this document.

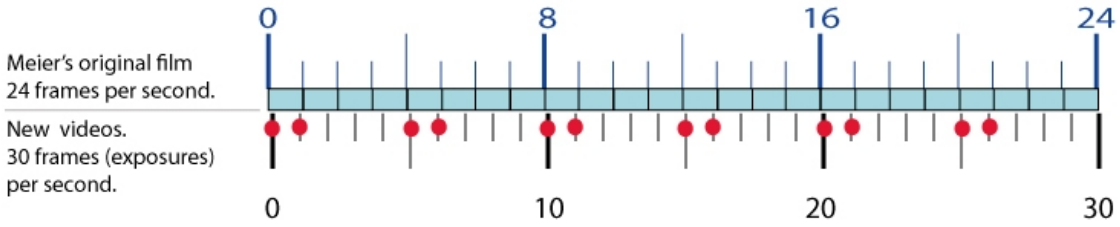


Fig. 3 – Representation of recording in 30 fps (below) of a projected image of a 24 fps film (above). The 30th exposure falls into the following second, so, from frame 0 to 29 we have 30 fps. Red dots show repeated frames.

Finally, at the end of the film, in phase 11, three areas with burned frames were found. (See figure 4.) It is common to find them in old 8mm movies, because sometimes the projecting lamp was too hot and it burned the emulsion of the film. These burns are typically somewhat elliptical (with squared corners) towards the center of the frame.

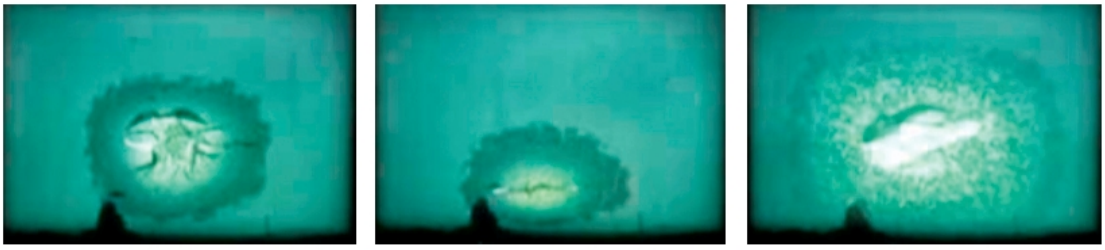


Fig. 4- Burned frames in the film.

The Model Theory:

Some skeptics and debunkers of the Billy Meier case claim that he used a model of around 30cms. (1 foot wide). Maccabee suggested that he used a pole in a "fishing rod" like operation. As pointed out by Professor Deardoff on his web site, such an operation would be impractical, since the pole would have to be very long and difficult to maneuver; I found it actually has to be 15 meters long (49 ft). Also, in this investigation's defined Phase 5 we can notice that two consecutive cycles lasted 5.0 and 4.4 seconds. It means a difference of 1.4 meters (4.6 feet) of the pendulum length. So, this change of length must be achieved in just 5 seconds whilst simultaneously moving in the same horizontal plane, in circles, without going up or down. This is extremely difficult to do with a pole, and for no purpose. We can see in Meier's video that the circular movements (Phase 5) are smooth, circular and at the same elevation indicating the length of the pendulum might be constant. But measuring the period time we know that the length must be changing. Is this a contradiction? There is a practical solution to this seeming contradiction, but it requires a different arrangement from a "fishing rod" type device.

Langdon, in his Youtube video, shows another approach; one of suspending the wire from a tree branch above. This approach does not work well either, since the length of the pendulum would be somehow constant. It also does not explain the differences in the duration of the period of the circular movements of the UFO in Phase 5, and other variations of time in other phases, or the difference in the length of the cord of 3 meters (10 ft.) from the shortest to the longest lengths. Furthermore, as pointed out by investigators like Wendelle Stevens, there is no tree or any sturdy support to hold a model in the location where the video was recorded. Additionally, I found any support would have to have been at least 11 meters above the ground.

Before a proposed solution is presented which also shows how many people are required to accomplish something like this, an experiment I did with some assistants, using a pendulum and trying to replicate all the phases shown in Meier's video, is discussed.

A pot lid was used as a UFO model. The model chosen was 25cm instead of 30cm, but the difference is of no consequence. The lid was hung by a thin nylon cord and the experiment performed used the pole or "fishing rod" approach (tests 1a, a, 1b) hanging the model from a tree branch (test 2). In tests 1a and 1b the length of the pendulum was 2.2 meters

(7.2 ft.), including the pole, and when we hung it from the branch, the pendulum length was 3.8 meters (12.5 ft.). These tests were done to check the feasibility, as proposed by debunkers, of only one person simulating Meier's video while reproducing all the phases. An exact replication of what Meier's film shows was not attempted since it would have been too complicated, as will be realized.

See the results in the following table and the measurements of the recorded time periods. Videos were made and then the results reviewed with the same video editing software and methods used with Meier's video.

Test	Description	Image	Pendulum Period (seconds)	Length of pendulum m/ft
1a	Using a pole, with a pot lid as a model. Planar pendulum movement. (left-right direction)		2.9 2.9 2.8 2.9 3.0	2.1 /6.9 2.1 /6.9 1.9 /6.2 2.1 /6.9 2.2/7.2
1b	Same pole as 1a, but with a conical pendulum (circles).		2.9 2.9 3.0 2.9	2.1 /6.9 2.1 /6.9 2.2/7.2 2.1 /6.9

Table 2 – Test 1a and 1b with the "fishing rod".

In test 1a and 1b, the model was found to be easy to move. Something interesting is that regardless of how the node (the top part of the pole where the cord was attached) was moved, the periods were the same in all cycles. The time measuring error is the same as that which was found in Meier's video (around 0.1 of a second, no more than 0.2 of a second). It was concluded that with this method, if the length of the cord does not change, the Period Time changes no more than 0.2 of a second. This test was not made with a 15 meter (49 ft) pole, as it should be if the skeptics are right, since it was an impossible exercise to perform.

The longest telescopic fishing rods used today in 2013 are around 10m long (http://www.dimensionsinfo.com/fishing-rod-dimensions/), so the idea that Meier used an 11m long rod -- let alone one 15m long in the mountains of Switzerland in 1975 -- is clearly untenable. The Guinness World Record was 22m 45cm in 2011. The picture below (figure 5) shows the world's longest fly rod. It is 60ft long and shows just how impossible it would have been for the one-armed Meier to use a 15m fishing rod. According to the Travel British Columbia Web site it "sits menacingly between the Chamber of Commerce building and Steelhead Park." Made entirely of aluminum it has never caught a fish and no one with two arms has ever had the strength to use it.

Fig. 5—The world's largest fly rod, 60ft long.
http://www.travel-british-columbia.com/north-bc/yellowhead-highway/houston/.

Phases on Test 2	Description	Image	Pendulum Period (seconds)	Length of pendulum m/ft
1	The Model is static for 23 seconds. A fixed wooden post was used instead of a small tree since the nylon cords would entangle in a tree.			
2	Pulling the model slowly from the left.			
3	The operator releases the cord and runs quickly to the other side, (behind the camera). The lid swings twice, like a free planar pendulum.		3.9 4.0	3.8/12.4 4.0/13.0
4	It quickly decelerates and remains above the tree. It is pulled from the right to stop it. (Using the right cord).			
5	The model moves in counterclockwise circles (as seen from the top). It is difficult to move it this way with only one operator pulling it.		3.9 3.9 3.9 3.8	3.8/12.4 3.8/12.4 3.8/12.4 3.6/11.8

Phases on Test 2	Description	Image	Pendulum Period (seconds)	Length of pendulum m/ft
6	It gradually switches to planar pendulum movement, left to right similar to Phase 3.		3.8 3.9 3.8	3.6/11.8 3.8/12.4 3.6/11.8
7	The model moves the treetop without touching it.	Not simulated here. In test 1a we tried to move a bush with no success.		
8	Immediately after it moves the treetop, it quickly changes direction to perpendicular. This part is difficult to replicate. The model oscillates violently if it is pulled.			
9	It continues moving back and forth. It shows two jumps when it is passing above the tree. Jumping can only be simulated by cutting the roll of film.		3.8 3.9 3.7 3.7	3.6/11.8 3.8/12.4 3.4/11.1 3.4/11.1
10	It decelerates as it approaches the tree (the post)			
11	It departs, moving in a conical pendulum path while ascending. The period decreases since the length of the pendulum also decreases. (Unlike in Meier's film where it remains constant)		3.8 3.4 3.0	3.6/11.8 2.9/9.4 2.2/7.3

Table 3 – Test 2, simulating all the phases with a nylon cord hung from a flexible tree branch.

In test 2, a flexible tree branch was used that could produce a wobbling of the model, like in Meier's video. However, this wobbling did not naturally occur in the test which proves that somebody has to pull the branch down to create this effect, while somebody else creates the other movements. If a branch is not used, but a solid support, somebody must pull and release the cord where the model is hung. In table 3 it is clear that in most cases the duration of the period does not change. It changes at the end, in phase 11, since the nylon cord is pulled and the length of the pendulum is reduced, so the period is smaller while it is ascending. In Meier's video, in phase 11, this does not happen; the period remains about the same.

It was also noticed that when pulling the model with the cord while it is coming towards the person holding the cord, the period does not change; but if the model goes in the opposite direction, away from the operator, the period changes just a little. In other words, if the cord operator gives an impulse to the model oscillation, the period does not change, but if he reduces the impulse, by stopping the model, the period changes. My tests, however, did not show the time changes as in Billy Meier's film.

The inevitable conclusion, after making all these tests, is that the length of the pendulum cord must change continually. So both methods proposed by debunkers, the "fishing rod" and the "fixed from a tree branch above" methods, are inadequate to explain the observed movements. If the "fixed from a tree branch above" approach is used, the length is approximately the same all the time. In the "fishing rod" approach, the operator may pull or release the cord, but as stated, in phase 5, the length must change by 1.4 meters (4.6 feet) from one cycle to another. Also the circular movements on a horizontal plane are seen with no changes in the elevation of the model.

Figure 6 – Arrangement in the "fixed from a tree branch above" model. It failed to explain the variable pendulum length. (Simulated image from actual photos)

So a different model is proposed that requires an additional operator. I call this model "the Intermediate Support". Figure 7 illustrates this. It consists of using a pole with a ring in one extreme. The cord must go through this ring. An operator can control this pole, moving it in circles or back and forth. If he elevates this pole the pendulum length will be increased, and if he lowers the pole, the length of the pendulum will be reduced. In this way, the length can change very quickly and it could explain the variation in the periods found in Meier's video. This model requires an additional operator on a high platform moving the pole. It can also make it easier to do the circular movements (conical pendulum) that were found very difficult to do with just one operator pulling a cord from one side with the model suspended from a tree branch.

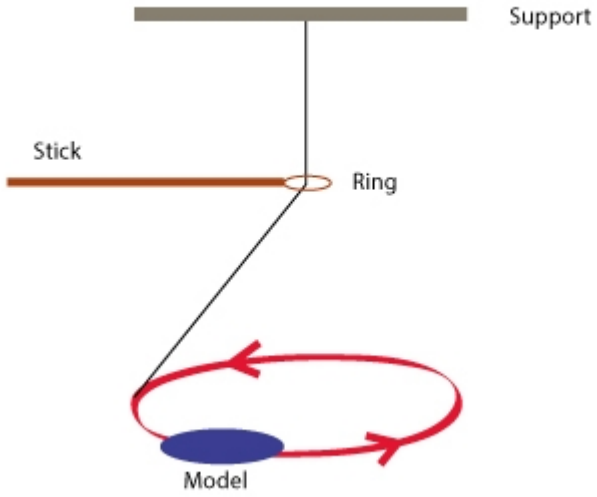


Fig. 7 – The Intermediate Support Model

So, are two operators needed, one on the ground and another on a platform, to create that which Meier's video shows if he used a scale model? No, more participants are required. Looking at phase 4 we notice the model stops abruptly, as if somebody is pulling it from the right. Langdon's simulation stopped the model in this phase, from the left, not from the right. So the operator on the ground (not the platform operator) should have somebody helping him from the other side. There is, however, an option. The operator on the ground can run from the left side to the right side, passing behind the camera, in 10 seconds, to hold another cord there, at the right. Let's call him "the runner". So, we can have a platform operator and one runner. In my experiment, three nylon cords were required: one from the top branch to the model; another from the model to the left; and another from the model to the right. It was actually difficult to avoid tangling all the cords on the miniature tree below the moving model. It was so difficult that in our test we switched to a vertical wooden post instead of the miniature tree. Three operators would be better, but let us assume we have only two: the runner and the platform assistant.

Now, phase 7 shows the UFO passing above the tree and the treetop moves; but the UFO does not touch the tree. Why is the treetop moving? Is there a hidden pole extending above the miniature tree that the model hits (which would cause a further distortion in the movement of the model that does not occur in Meier's video)? Maccabee acknowledges this part of Meier's video, but he does not explain how it happens. Langdon's simulation shows the model hitting the treetop, which does not occur in the original video. Observing it carefully, we see

that the treetop moves after the model (or UFO) has passed it by 1 UFO/model diameter. So there is a delay in the movement, and the invisible extension above the tree would not be enough to explain this occurrence. From the results of this investigation it is thought that the treetop might move because of air turbulence from the passing UFO, or another unconventional force (like a force field from the UFO). The model tested is so small that it cannot create turbulence. A bigger object, like a 7 meter UFO could create such turbulence.

The debunkers could attempt an explanation for that: there is another cord, attached to the top of the miniature tree, and somebody pulls it from the right, at the precise moment that the object passes over the tree. Also, another firm cord would be required, attached to the middle part of the miniature tree from the left, otherwise when the wire on the right is jerked, the entire miniature tree might topple or be uprooted. Fine, let us say it is a possibility, so we have somebody else, a "treetop pulling assistant". The runner cannot do this, since immediately after the tree-top is moved, the model changes direction as if somebody is pulling it from behind the camera. So the treetop-pulling assistant, holding the cord on the right, might pull the treetop while the runner pulls the model from behind the camera.

So… we now have three people participating in a very complicated simulation… but it is a possibility.

Now, how can the wobbling be achieved? The model moves up and down while balancing. It can be done either by another assistant pulling up and down the cord that holds the model from above. Or maybe any of the ground operators could do that.

Reason suggests a minimum of three operators are required (the runner, the platform assistant and the treetop-pulling assistant), but five would be better. Having just one person – especially a one-armed man - pulling a lot of cables and running around to do all this is not possible.

Figure 8 shows the design of the scenario where Meier is to have recorded his video. Three operators were included as described above. From table 1 the minimum pendulum length is 4.8m (15.8 ft.), in phase 5. This distance helps us to find the lower point where the "platform operator" must locate the ring on the end of his pole. Also, in phase 11 it is noticed the length of the pendulum is 6.7m (22.0 ft.) when the model was ascending. This assumes that it represents a location in the middle of the way up, at 2.4m (8 ft.) below the lower location of the

platform operator's ring. So the upper location where the platform operator must locate the ring is found (see figure 8).

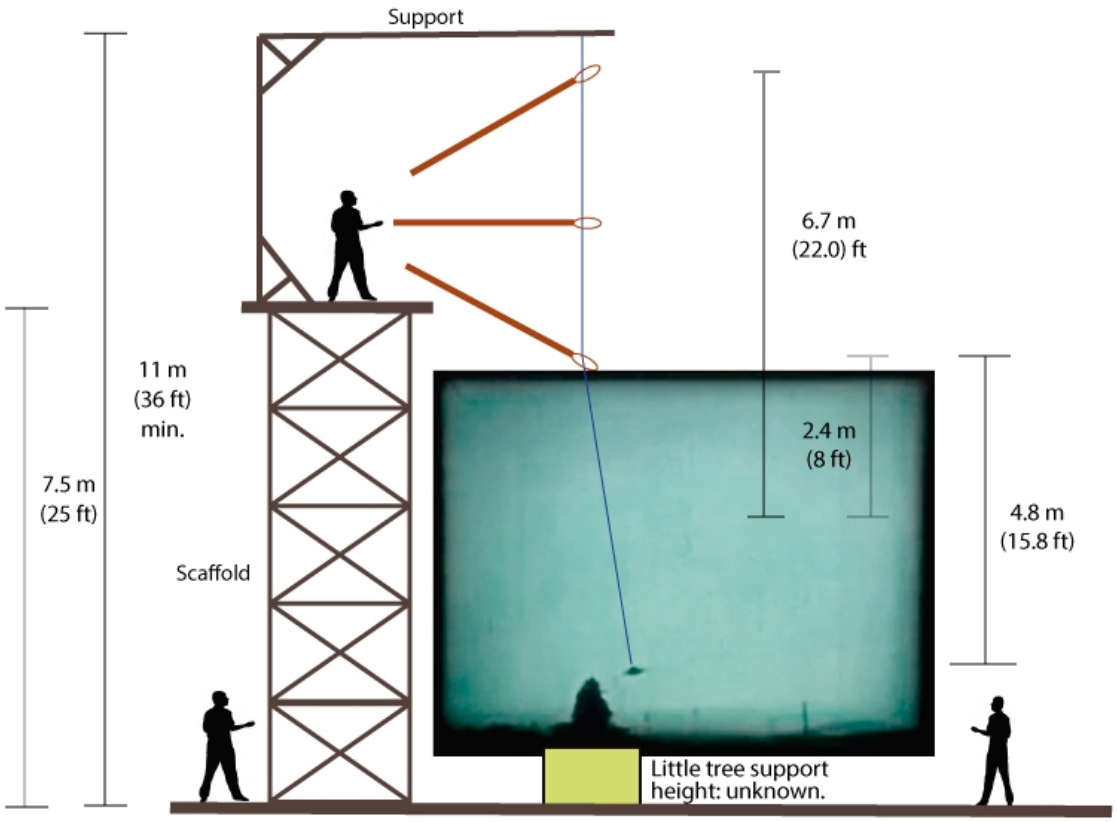


Fig. 8 – Dimensions of the arrangement to make the UFO pendulum video – to scale.

In this arrangement, the platform operator, holding a 4 meter long (13 ft.) pole, must be located at around 7.5m high (25 ft), and the top support of the cord sustaining the model must be at a height of 11m (25 ft.). By observing photos of the location where the video was recorded, it was noticed that the miniature tree must be elevated from the ground (see figure 6 simulation, made from a photo of that location from where the camera was positioned), and/or arrange the tripod to be at a very low elevation. Either way is feasible. The model of the UFO must be around 30cm wide (1 ft.) and the miniature tree must be 1.3m tall (4.3 ft.), at around the same height above ground level.

The platform operator performs a few important roles. He can move his pole in circles, so the model moves in circles too, as in Phase 5, sometimes lowering the pole and sometimes raising it, so it would explain the differences in the length of the pendulum, which is

measured from the model to the ring at the end of the pole. Also, towards the end of the demonstration, in Phase 11, while one of the operators on the ground slowly pulls the cord to raise the model, he has to elevate the pole ring in order to explain why the length of the pendulum is not reducing. Raising the ring is easier than having the top support move upward by any mechanical aid. All of this may sound quite complicated, but in our proposed method it is the easiest way to do it to accurately match the observable movements of the dancing UFO.

This arrangement makes it possible to do, even if it seems like the stage set for a Hollywood movie. However, doing it in one single staged set, with a single take, seems most unlikely due to the difficulties and complexities of the operation. One would naturally ask: "Why didn't Meier do something simpler?" Can one imagine constructing all of this, with some fellows (sworn to secrecy, and beyond any independent external observation) in the middle of a farm on a cold and snowy day?

In summary, this complicated scenario for shooting the video comes from the findings that the pendulum length is constantly changing. Neither the "Fishing Rod" nor the "Fixed From a Tree Branch Above" model explains these variations in the pendulum length; and the fact that at the end of the demonstration (phase 11) when the model is ascending it does not reduce the duration of the period, means the node of the pendulum (the ring) is also being raised.

In addition to all of this, if Billy Meier employed 3 or 5 assistant hoaxers, then during the 38 years since the filming, at least one of the assistants would have probably blabbed the truth to Meier-case critics and investigators, in order to brag about how they fooled so many Meier-case supporters. So we must assume that the assistant hoaxers still remain silent, if they ever really existed.

With this approach (complicated or not), somebody could simulate most of the physical characteristics of the movement of the Pendulum UFO. However, a few interesting manifestations shown in the original video cannot be explained in this, or any simulated, hypothesis, so we need next to explore these and check the possibility that they were made by a real UFO.

The UFO Theory:

There are five aspects in the performance of the UFO in Billy Meier's film that are difficult to accomplish in the "Model Theory". Some of them show that it is a large object. Do other aspects indicate it is a flying object that might be…not from the Earth?

The UFO theory states that this is a space ship (a "beamship") around 7 meters in diameter, controlled by Semjase, an extraterrestrial woman, moving her ship in a way that mimics the movement of a pendulum, yet not in such a way as to affect Earth peoples' beliefs by *conclusively proving* that ETs are visiting Earth. At the same time she left some clues in the film that upon detailed investigation show it is not just a scale model on a pendulum, but a sophisticated flying object of an unknown nature: a UFO. The tree in the picture was allegedly eradicated later by the ETs and the memories of its existence erased from the minds of the inhabitants of the house shown in the background (but not from other people like some FIGU members living at Meier´s place).

If the above statement seems totally irrational and shocking to you, it means this idea can really affect your belief system, so you should stay with the pendulum theory and not go any further in this investigation. But if you are open to consider the possibility that this film really shows an extraterrestrial ship, you may find the rest of this document interesting.

These are the details in the video that are difficult to explain with a model hypothesis:

1- The Moving Treetop:

In phase 7, as mentioned before, the UFO moves the top of the tree, without touching it. It shows that the tree and the flying object are at the same distance from the camera, since they are interacting. Maccabee recognizes that it happens but he does not offer an explanation for this. Langdon's simulations show his model hitting the top of his miniature tree, which is not what happens in Meier's film.

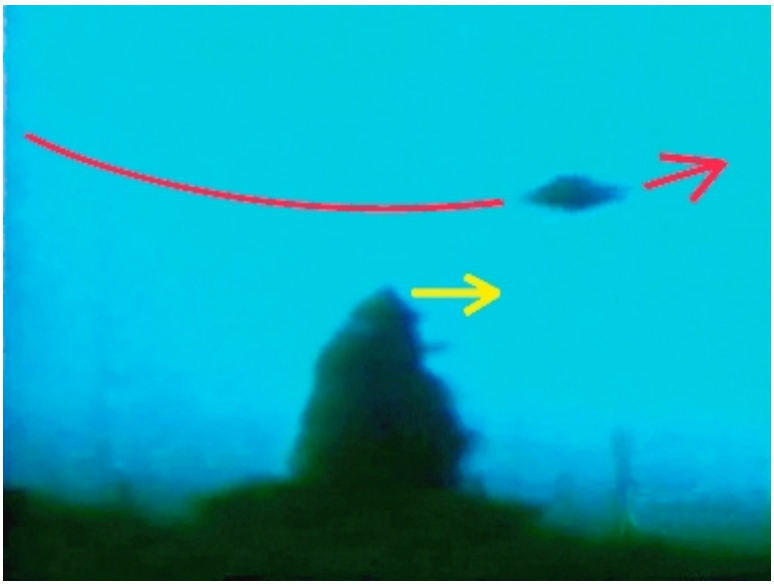


Fig. 9 – Treetop movement after the UFO crosses above it.

I did some tests with a small, flexible bush. My model was moved above the bush, very close to it, but the turbulence created by the model did not move any leaf of it. A small object cannot create enough turbulence to move it. But a big object can produce this turbulence.

Imagine that you are wearing a hat and a remote-controlled scale model of an airplane passes over your head. Your hat will stay on your head, since the turbulence is not strong enough to remove it. Now, if you are on a landing strip in an airport, and a plane passes over you, you not only will lose your hat, but the turbulence will move you.

Watching Meier's film in slow motion, it is noticed that the tree moves after the UFO has passed (as shown in figure 9, with the frame indicating when the treetop starts its movement). This is consistent with turbulence caused by a big object. The UFO moves the air around, and that air moves the tree. So a delay can be expected in the movement of the tree.

However, it is not impossible to simulate this effect in a miniature tree. It can be done by pulling a wire attached to the top of the tree as explained in the Model Theory. This can be done, but is perhaps difficult to do. It would be difficult to synchronize this movement at the right time. If it was done in the way the Model Theory says, it is likely Meier would have lost a lot of rolls of film before catching the model and treetop at the correct moment of time. Of course, it means, in the model

theory, that another operator with a cord is located at the right of the tree waiting for the precise time to move the little treetop.

Some investigators do not fully agree with the "turbulence" explanation. They think there is perhaps another mechanism, from an extraterrestrial spaceship, capable of moving an object without touching it, like using a force field or something similar. It appears that none of the passes the UFO did were too close to the treetop, except one, in Phase 7. This was close enough to produce turbulence that could move it.

To conclude this section, turbulence from a big object, not a scale model, is the more feasible explanation here, however, since a UFO can fly without disturbing the air, it is possible that the air turbulence proposed is not fully correct; there could possibly be other UFO forces at work.

According to Meier and the UFO hypothesis the tree was accidentally exposed to some kind of radiation when the UFO approached the tree too closely. This was the reason for its removal; the radiation gave evidence or *proof* that the ETs were there, and this went against their plans or directives. They couldn't eradicate the radiation so they eradicated the tree. If this actually happened then the UFO indeed interacted with the tree in at least an energetic radioactive manner of some kind which produced physical results. This could also prove significant when looking at the UFO "jumps" performed and the burning produced on some of the film frames as the UFO "jumps". (See figure 16.)

2- This is a big tree close to the house:

By watching the film, we notice the tree looks to be a real one. In figure 10 (right side) we can see the level of blurriness of the house, the tree and the UFO, and they appear to have the same degree of blurriness. This means they are about the same distance from the camera.

Fig. 10 – On the right it is the actual image from Meier's film. On the left is a simulated image of a miniature tree and a UFO model close to the camera. If the tree is a miniature tree close to the camera, the level of blurriness (or sharpness) would not be the same as the house in the background.

Fig. 10 (left side) shows a simulation of a miniature tree in front of the camera, with a scale model of the UFO. The level of sharpness would be higher in nearby objects. But Meier's film shows all these objects, the tree, the house and the UFO, at the same level of blurriness.

Also, as pointed out by Professor Deardorff on his website, by enhancing the image of the tree we notice how it looks to be located in front of the house or close to it. (See fig. 11).

In figure 11, we see no evidence of any supporting device for the tree like a table, or plant pot for a little tree. Part of the house is visible below the lower branches of the tree. Also, by looking at the enhanced image of this figure, there is a possibility that the tree is located behind the house, rather than in front of it. Better images, such as scans from some frames of Meier´s original film, might reveal more interesting details of this tree.

Fig. 11 – On the right, there is an image from the Japanese investigators' film showing the distant house (without the tree). On the left is Meier's enhanced film image. The tree definitely appears to be close to the house.

3- A smooth sharp turn:

In phase 8, after the UFO moves the treetop, we see the UFO doing a very sharp turn moving towards the camera. (See figure 12.) If this is done using a model, as in the Model Theory, the cord might be visible, since the cord pulling the model is located very close to the camera. Remember, I found it impossible to simulate this smooth movement with my model. Also, by watching the Langdon simulation in his Youtube video, we see that the model shakes after this turn, and it looks like there is a violent pull of the model. In Billy Meier's film, this movement is smooth (figure 12).

Professor Deardorff, on his website, gives more arguments to show that this movement cannot be done in a model scenario. It is easy to agree with him, since I tested it several times, and it was extremely difficult to duplicate and impossible to perform smoothly. The model always tilts and shakes after this turn. We have not been able to duplicate this smooth movement and we have not seen anybody else do it successfully.

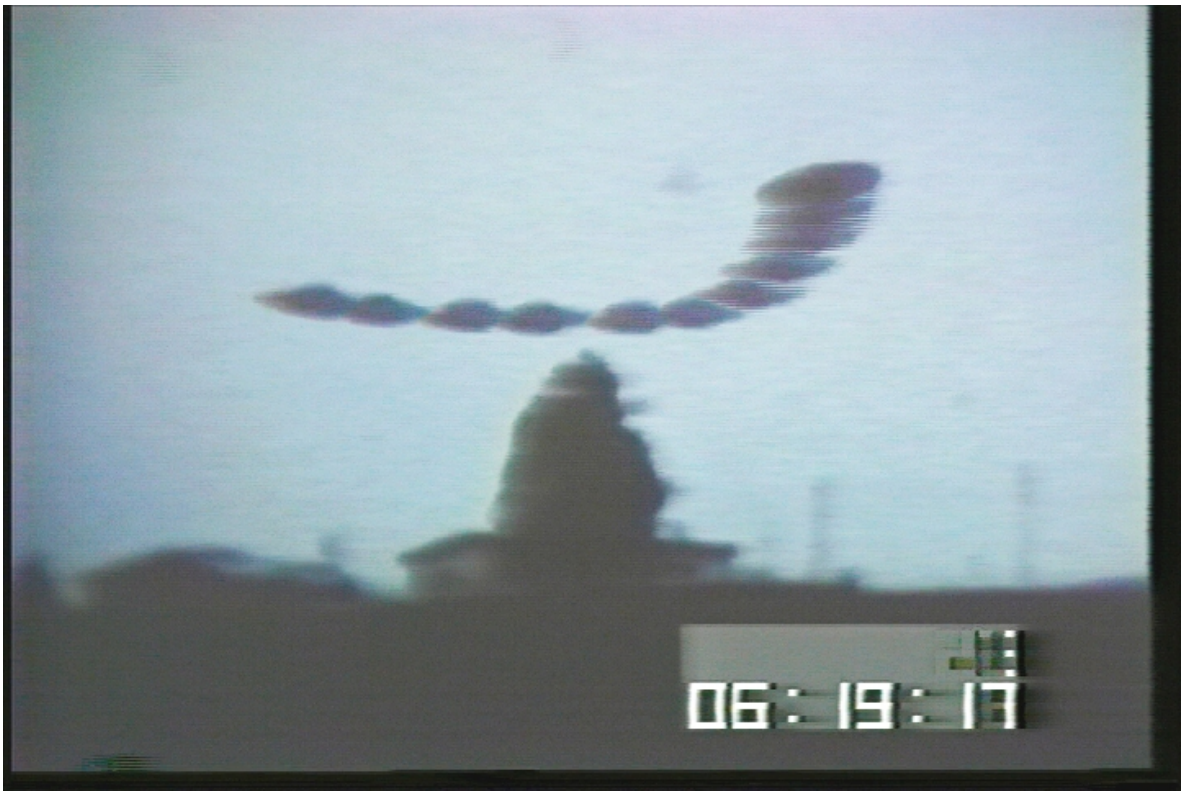


Fig. 12 – A composite of the different images of the UFO doing the smooth sharp turn. Image taken from Professor Deardorff´s website.

4- The UFO is not a scale model:

In point 2, as already stated, it is reasonable to conclude the UFO, the tree and the house are about the same distance from the camera. It means, the UFO is a large object, not a small model close to the camera. (See figure 10).

Meier reported that it was snowing on the day he made his movie. We can see in the video that even if the air is somehow clear, there is a bit of haze or light snow or light rain in the air. Figure 13 shows a comparison of the distant house and hills on a clear day from a film recorded by Japanese investigators in the same place Meier recorded his video. The hills at the right are noticeably blurry in Meier's film. So the air was not completely clear and it explains why the images are not very clear in Billy Meier's film, which was filmed in the evening.

Fig. 13- Comparison of the location's background blurriness.

So, it is unlikely that the camera was out of focus on purpose as some debunkers claim.

The level of blurriness (or sharpness) in visible objects in the film can give us a clue as to whether we are looking at a distant object or a nearby one. We noticed that the UFO, the house and the tree all show a similar level of blurriness indicating that they are all located at a similar distance. Also, we noted that the UFO itself shows changes in clarity depending on whether it is closer or further away.

Maccabee used a formula to calculate the distance and size of the unidentified object (UO), since he assumes it is a model on a pendulum. His calculation shows the object is very close to the camera. He calculated that the distance between the most distant point, and the nearest point in the circular movement of the UFO around the tree, is ten times the diameter of this circle. Maccabee estimated this value based on the difference of the apparent size of the UFO/UO when it is close or far away. All these calculations, however, can be applied to a nearby model (UO), or a distant UFO.

The geometry shows both scenarios capable of producing the same results, meaning, the proportions are the same for the UFO and the model when they are close or far. Figure 14 illustrates both possibilities; a distant UFO, and a nearby model. The point "O" at the left represents Meier's camera. The scale model is represented by the two circles on the left, and the little tree is in the middle. The UFO, which is larger, is represented by the two circles at the right, and the big green object in

the middle represents a large distant tree. The apparent size of the model or UFO when near (left circles), is the angle P-O-S, and the apparent size when far (right circles) is represented by the angle Q-O-R. We can see that the angles are the same in both cases, so the relationship between the apparent sizes, whether near or far, is the same in both cases.

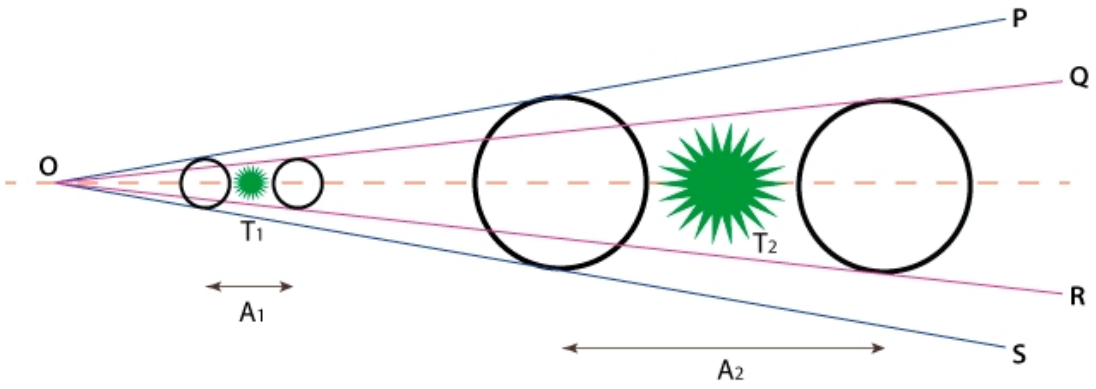


Fig. 14 – Geometry of a nearby model and a distant UFO. The angles are the same.

Maccabee estimated the distance A1 as 10 feet (3 meters), which is twice the radius of 5 feet, and the distance to the nearest point equals 50 feet (15.2 meters). The furthest distance in his calculation would be 50 plus 10, which equals 60 feet (18.3 meters). This is based on a ratio of 1.2 of the apparent sizes of the object when near compared with when it is far. Professor Deardorff estimates this ratio to be 1.3. I will assume 1.2 is correct.

If we do the same calculation for a distant UFO, we can have proportionally bigger values. We can estimate the radius of the circular movement of the UFO at 35 meters (115 ft.). So the values in each case will be:

Object	Closer Distance	Farther Distance	Little Tree/ Tree distance
Model (30cm/1 ft)	15.2m (50 ft.)	18.3m (60 ft.)	16.8m (55 ft.)
UFO (7m/23 ft)	350m (1150 ft.)	420m (1380 ft.)	385m (1265 ft.)

Table 4 – Distances to the model or the UFO.

So:

A1 = 3m (10 ft.)

A2 = 70m (230 ft)

How can we know if what we are looking at is a small model or a large UFO when the geometry indicates either could be the right answer? Maccabee uses the pendulum formula from Newton's law. If we assume the model theory is correct and we are seeing a pendulum movement, then the distances are the ones for the model in table 4. Conversely, if we consider the UFO theory correct with the UFO simulating a pendulum movement, the distances are the ones for the UFO in table 4. Newton's law contributes nothing towards finding the right answer. Either theory might be correct. However, the level of blurriness of the images gives a clue that may put an end to this controversy.

Fig. 15 – Different levels of blurriness of the UFO. Top left: the UFO when far. Bottom left: the UFO when near. They are clearly different. The house and the tree are at the right.

Figure 15 shows the images of the UFO when near and far, and the house and the tree. It is very clear that the edges of the UFO are much less sharp when it is far away than when it is near. There is an obvious difference in both images. Now, for a model that is not far away from the camera, a difference in the distance (A1) of just 3 meters (10 feet) can never create such a difference in the blurriness of an image taken with a movie camera like the one Meier used. The only way it would happen is if there is a *very* dense fog in the environment, and if that were the case here we would not be able to see the distant house, nor the distant hills. For a large object of 7 meters, however, making the difference in the distance (A2) 70 meters (230 feet), it would be correct to find the difference in the blurriness in the images; and this is what Meier's film shows.

You can confirm this for yourself by making your own test. Go outdoors, and locate an object at the distances indicated in table 4 and you will find, that a nearby object will not create such variation in the blurriness (or sharpness of the image), but a distant object will do so. It occurs at times of low visibility or haziness in the atmosphere, like the heavily overcast evening when Meier filmed his movie.

In conclusion the object can only be a big one, and the UFO theory, being the only hypothesis which fits all the available data, seems to be correct.

5 – The UFO "jumps" in space:

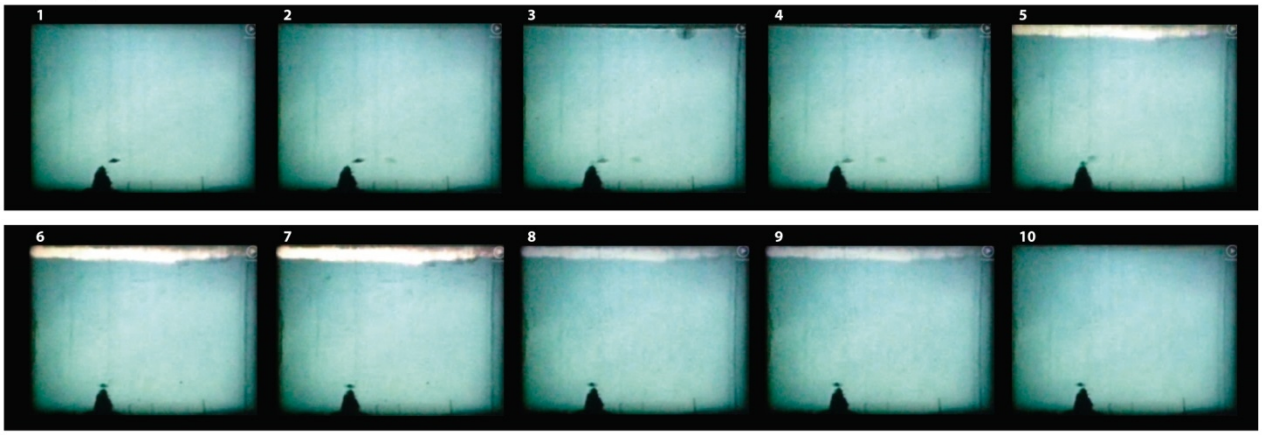
The most fascinating aspect of this UFO is the demonstration of its "jumping" in space. This means it is actually moving extremely fast from one location to another. There are two of these UFO "jumps" in phase 9. They cover a short distance, above the tree, "jumping" around 10 to 15 meters if we estimate the UFO measures 7 meters. The first "jump" occurs at 1min, 34sec., and the second one at 1 min, 47sec. into the film.

Maccabee considered these "jumps" as a trick caused by cutting the film, meaning cutting away a few intermediate frames in the roll and discarding them. He says that the camera jumps in the cut area in the film, and it actually does. He posits that the cut film was not well aligned, and this is the reason the image jumps. I think Maccabee is not looking at the whole picture. By analyzing these events frame by frame in the zoom and full view (the whole picture) evidence is found revealing this to be a very peculiar event.

I also performed a test of cutting the roll. It can be done very easily with a video editing tool that deletes some frames. The observed differences are now presented.

Figure 16 shows, frame by frame, the two "jumps" that happen in phase 9. The first "jump" happens when the UFO is going away from the camera, and the second "jump" happens 13 seconds later, when the UFO is moving towards the camera.

Jump 1



Jump 2

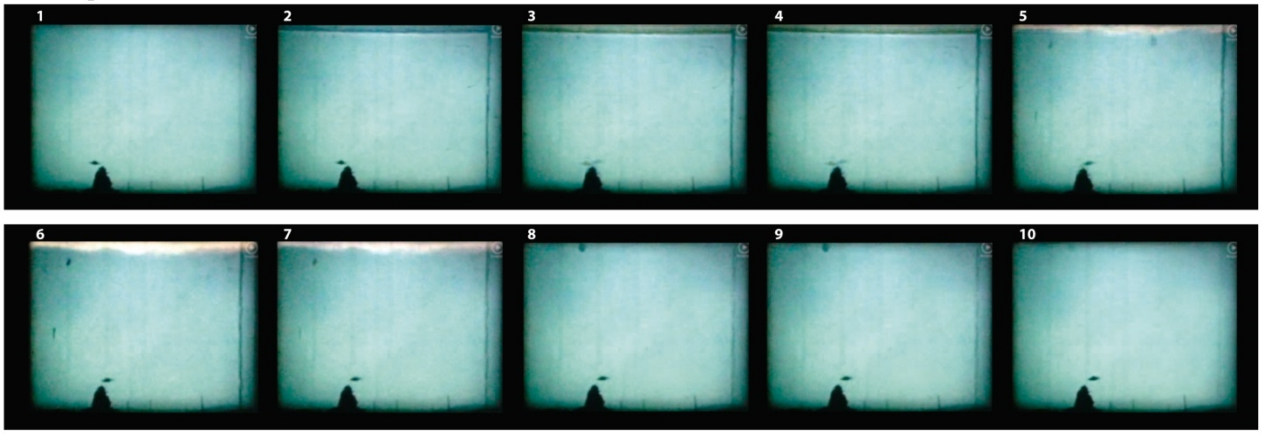


Fig. 16 – Frames from the two "jump" events. Full picture views.

As mentioned before, due to the recording at 30 frames per second (fps) of a film originally filmed at 24 fps, repeated frames are created in the film strip; and these repetitions occur every 5 frames. In jumps 1 and 2 in figure 16, frames 3 and 4, and frames 8 and 9 are the same. These repeated frames may be ignored. There is a noticeable narrow bright band on the top of some of the frames that occurs in 3 to 4 consecutive frames. It looks like a burn to the roll of film at the precise moment of the "jumps" (like Figure 4, but here with a long burned area at the top of each frame). Also, looking at a zoom view, we find the image moves vertically a bit with every "jump" of the UFO.

In the classic documentary *Contact - from the Pleiades*, when Meier described the jump capability of the beamships, he says he felt an electric shock when it happens. Maybe these ships produce an electromagnetic pulse (EMP), or electric pulse, that somehow affects the

camera, overexposing or burning the top area of a few frames (in the bottom of the camera since the image is inverted). This pulse might also move or alter the normal movement of the roll through a wave of electric shock thus accounting for the movement of the image. The movie camera has metallic mechanical parts that can be affected by an EMP. The bright band on the top could be explained by an internal electric arc generated inside the bottom of the camera (since the image is inverted, the films shows this bright band on the top)

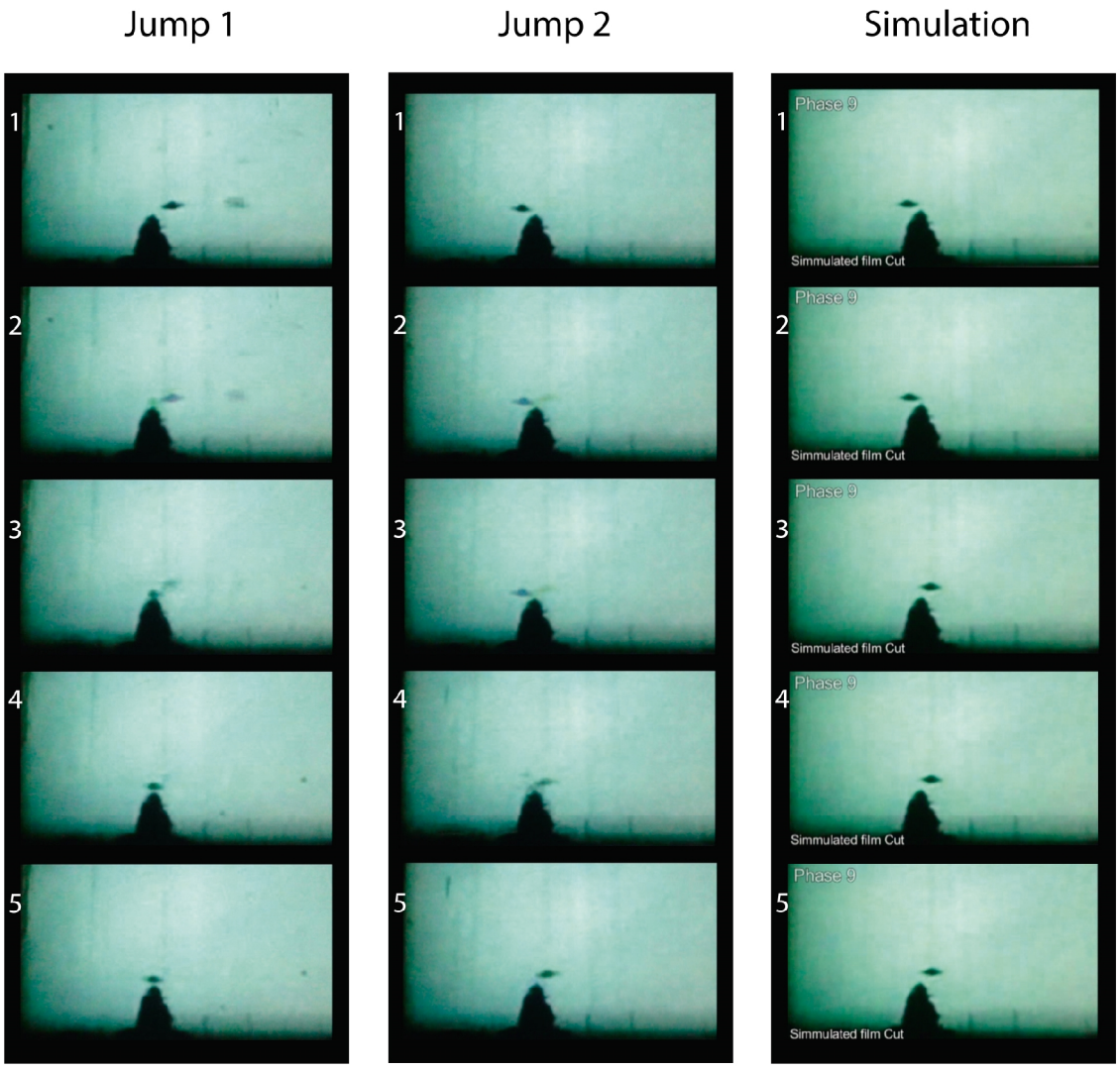


Fig. 17 – Zoomed images of the two "jumps", compared with a simulated cut.

Figure 17 shows the sequence from a zoomed video. In Jump 1, frames 4 and 5 are repeated, and frames 2 and 3 in Jump 2 are repeated. The right side film strip displays a simulated film cut. I did it by cutting a few

frames from the video with the computer editing tool. We can see the difference, both jumps show the UFO gradually disappearing and reappearing in a different position.

Figure 18 is a bigger zoom, and it is clear how the transition occurs. Repeated frames were excluded. It seems like the UFO does not move instantly, or literally jump, but transits very quickly. The simulated cut shows an instant jump, not a quick transition as Jumps 1 and 2 show.

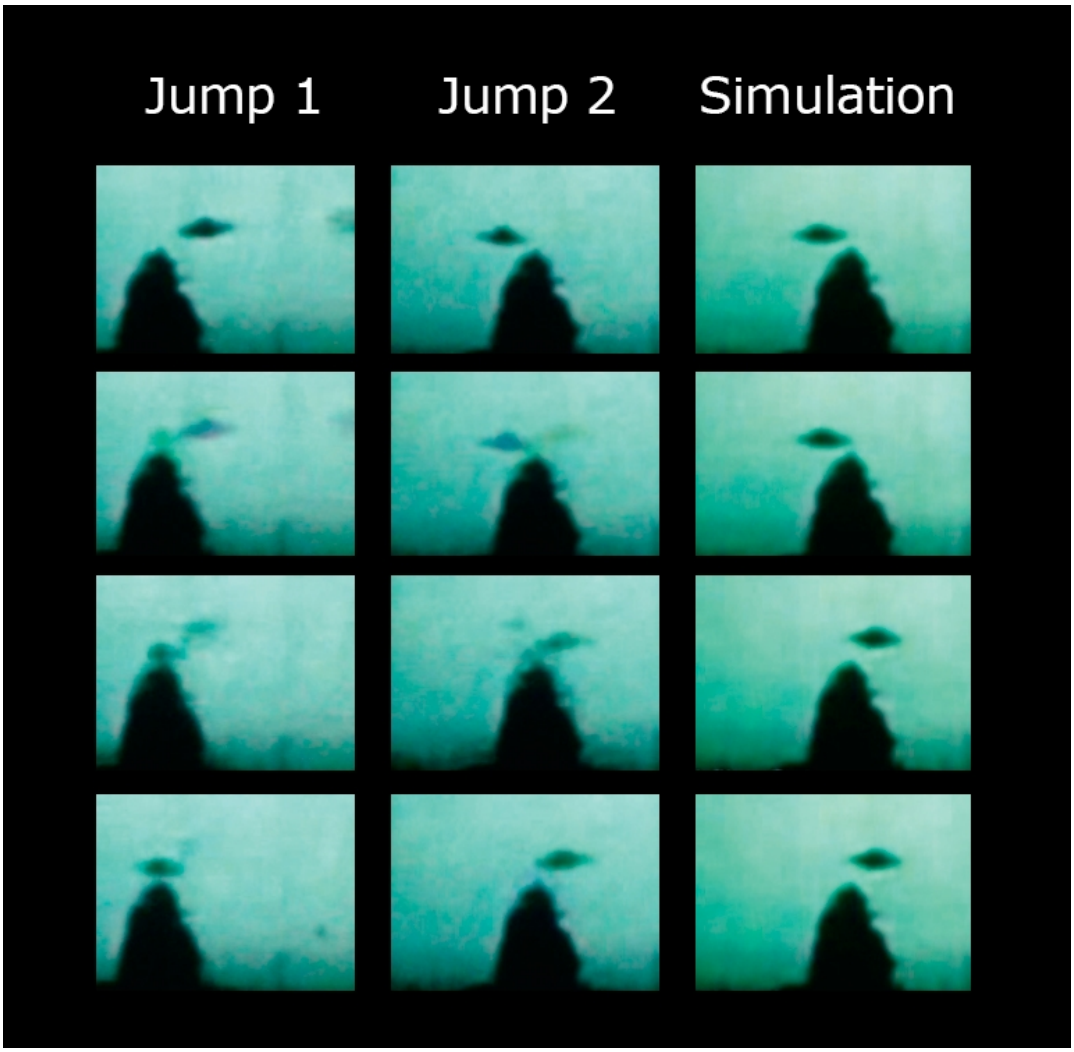


Fig. 18 – Zoomed detail of the two "jumps". Jump 1: right to left (near to far). Jump 2: left to right (far to near). Simulation: left to right (far to near).

When examining the film at the beginning of this document, it was noted that some overlaid frames can occasionally be found in the analyzed film. This occurs when one frame of the 30 fps recording is

captured, and it exactly coincides with the change of two consecutive frames of the 24 fps original film. An overlaid frame shows two images of the same UFO in the same frame. It is impossible to find two contiguous overlaid frames and we did not find them in the videos we analyzed. So, it would be incorrect to explain what is seen here as a coincidence of overlaid frames in the two "jumps", during 4 to 5 consecutive frames each.

Figure 19 illustrates in five steps how the UFO performs the "jump". A diagram is shown with the UFO moving to the right, disappearing from one location in space, and appearing in another location in front of it. That is how it occurs in Meier's video, as we see in the film in figure 18, during 4 to 5 frames (a time of about 0.13 to 0.17 of a second); the UFO disappears and reappears again at the same time in another location in space. The simulation done on the right hand in figure 18 is not the way it occurs in reality as indicated in figure 19. It cannot be a coincidence caused by a damaged camera that at exactly the same place where the UFO crosses above the tree, on two occasions, such a transition and unexplained rapid movement is created.

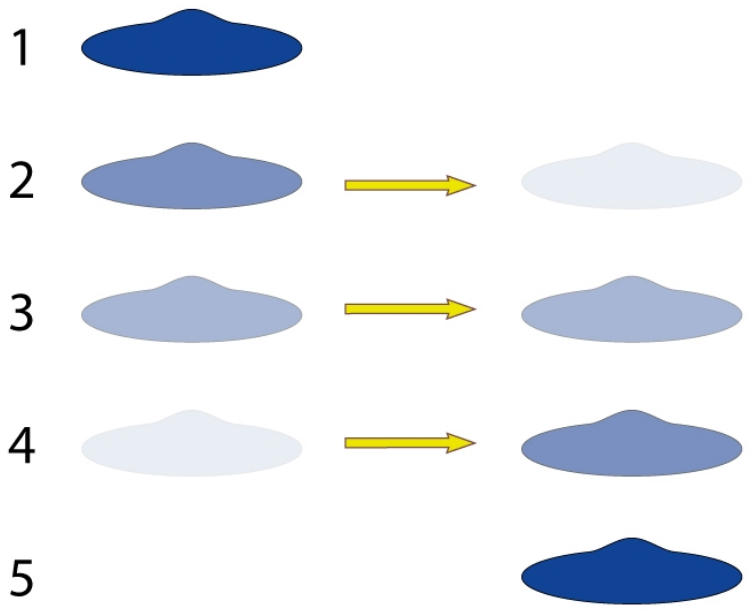


Figure 19 – Depiction of the UFO's Jump process.

I think the jumps are the most bizarre part of the film, and it demonstrates a capability difficult to emulate by earth humans. It does not seem to be a trick in the film. We have to remember that Meier's

movie was shot in the 70s when there were no computer tools to manipulate images and only very rudimentary movie cameras available to the general public like Meier. It is unlikely that the UFO actually disappeared or was invisible for a fraction of a second; rather it was changing its position in space in a very short span of time.

Do it yourself:

In reading this investigative report on the Pendulum UFO, or in having read another before, you might be annoyed to find so many formulas, interpretations, analyses and conclusions that differ from those of many "experts" (including me). Whose findings are you going to trust? Are you going to check the level of expertise or character of the investigator? I think that makes no sense.

The purpose of this document is not to convince you of its conclusions, but just to show what has been found. So I encourage you to investigate it for yourself. You can be the scientist or investigator. By investigating for yourself you will come to understand what the real origin and nature of this film is. You can experiment with a pendulum, video while you are doing it, use a video editing tool to measure the period of the pendulum and confirm whether or not it constantly changes, check Meier's video which is readily available in many places, and find your own answers. That makes sense and will give you your answers.

Conclusions

- Since the time measurement done in this investigation's video indicates that the length of a hypothetical pendulum is changing in many places in Meier's film, it is concluded that for a model to be involved a sophisticated arrangement 11m high is required to explain just most of the events that occur with the Pendulum UFO.

- In the Pendulum Model hypothesis it is necessary to include at least three participants (although five would be better) in order to perform all the simulations. It is not possible for one single man with one arm to do all that the film shows using a hanging model.

- Not all the events and situations can be explained with the Model on a Pendulum hypothesis. Five reasons were found why the UFO hypothesis is the most likely to be the correct one:

    1. The UFO moves the treetop, and a model cannot, without synchronizing the movements of the model and the treetop which is difficult to do.
    2. The images show the tree is a large one, close to the house and possibly behind it. It is not a little tree.
    3. The UFO performs a unique smooth sharp turn, which cannot be simulated with a model because the model always shakes.
    4. Looking at the blurriness of the UFO when near and far, we find that it is a large object. A scale model cannot display the difference in blurriness seen in Meier's film.
    5. The UFO performs two "jumps" in space, appearing twice in single frames. This cannot be achieved by cutting the roll of film. The "jumps" also burned a bright band at the top of the film indicative of some kind of energy interaction.

- The differences in blurriness of the images, such as the tree, the house and the UFO, shown in the video, demonstrate that we are looking at distant objects, not nearby models.

- The most surprising parts of the video are the two "jumps" of the UFO, showing extraordinary capabilities, and they are not the result of a trick, like cutting the roll of film.

- As with other pieces of evidence in the Billy Meier case, the same pattern emerges: at first glance it seems easy to find a simple answer to demonstrate it as a hoax; but upon performing a detailed investigation, hidden clues are found indicating just the opposite and that the film is just what Meier says it is; a film of an extraterrestrial UFO.

Maybe as implied by Occam's razor, the hypothesis with the fewest assumptions is generally the correct one, but in the Billy Meier case the hypothesis with a few assumptions, upon detailed investigation, becomes very complicated. An apparently simple explanation turns out in the end to be a very complicated one. No matter, the simplest hypothesis in the Billy Meier case comes forward day by day as the most likely correct explanation: that all of this was done by extraterrestrials.

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Appendix

Pendulum formulas

There are several kinds of pendulums. In Meier's video we find the following three.

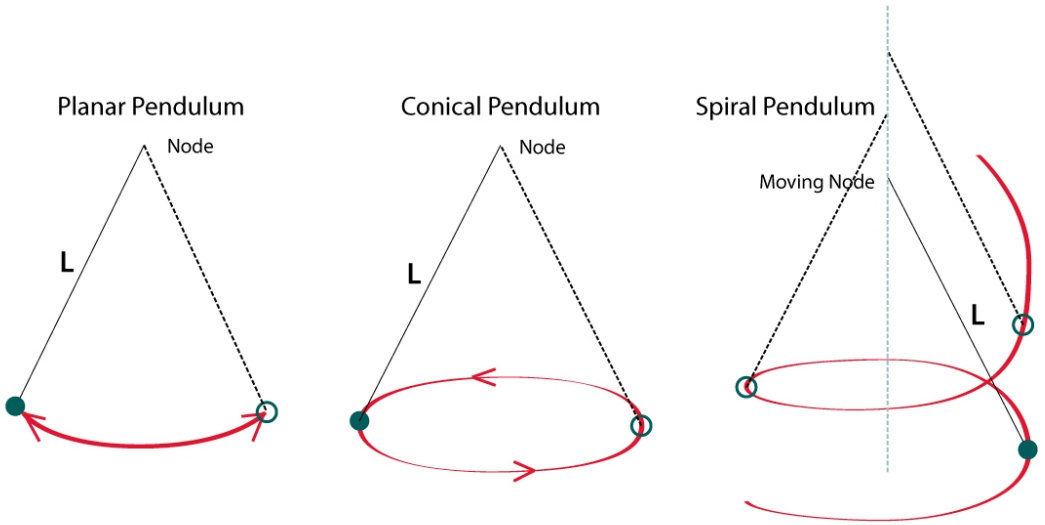

Fig. 20 – Three kinds of pendulums found in the Meier film

In planar pendulum, the object moves in a vertical plane. It is like the wall clock pendulum. These are phases 3, 6 and 9 in Meier's video.

In the conical pendulum, the object moves in a horizontal plane, in a circular path. This is phase 5 in Meier's video.

The spiral pendulum is like the conical pendulum, but the node moves vertically. This is phase 11 in Meier's video.

The amplitude of the pendulum is how far the object goes away from its central point. It does not matter how big the amplitude is, the period of the pendulum is generally the same. (Providing the object is always below the node).

If the node moves, there is a small variation of the period. In practical terms when performing an experiment this period does not change when moving the node to duplicate Meier's video movements.

If we measure the time period of the pendulum ("T"), we can determine the length ("L"). The period of the pendulum is the time it takes the

object to complete one cycle. For example, in planar pendulum, if we measure the time from the left position, this *period* is the time it takes to move to the right and come back to the starting point (the left side). In the conical pendulum, the *period* is the time the object takes to reach the starting point again (complete one circle). In the spiral pendulum, we can measure the *period*, starting at one extreme, e.g. the leftmost position, and measuring the time until it again reaches the leftmost position.

The pendulum formulas are:

$$T = 2\pi \sqrt{L/g}$$

Or,

$$L = \frac{T^2 \, g}{4 \, \pi^2}$$

Where,

T Is the period as described above. (In seconds)
L is the length of the pendulum. (In meters)
g is the earth's gravity acceleration, equal to 9.8 m/sec^2
π is the constant equal to 3.14

For example, in phase 3 in Meier's video the period was measured as 5.6 seconds. So we can calculate the Length of the pendulum:

$$L = \frac{T^2 \, g}{4 \, \pi^2} = \frac{5.6^2 \quad 9.8}{4 \, (3.14)^2} = 7.8 \; meters \; (25.5 \; ft)$$