UFO UpDates Mailing List

Comments on Mexico City Video of 08-06-97 - 2/2

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Date: Thu, 13 Nov 1997 21:44:29 -0500
Fwd Date: Fri, 14 Nov 1997 10:23:07 -0500
Subject: Comments on Mexico City Video of 08-06-97 - 2/2

[Part 2]

1b. The model must be some distance from the camera for the image to be in focus at full zoom (don't know this minimum focal distance). This places minimum size requirements on the field of view of the camera as compared to the location of the camera. That is, if this were videotaped in a room looking out through a window, the window must be big enough so that it does not appear in the video even when unzoomed.

1c. If a 3 dimensonal model it cannot be reflected in glass. One might imagine a small model, illuminated in some way so as to make a visible reflection in a glass window. Looking through the window the camera would "see" the background objects (buildings, sky) and a reflection of the model. If videoed with a hand-held camera the whole picture, background and model reflection, would jiggle together, as would happen with a real object at a great distance. The ufo model could be rotating and wobbling. By moving the model appropriately one could make it appear to move. However, it would be "difficult" to give it an "instantaneous" acceleration followed by a constant velocity. It could not simply be a small model rotating at the end of a string. It could be mounted on a rigid rod with appropriate rotation and wobble dynamics created by a mechanism. However, if the model is bright enough to have its reflection visible against the bright sky it would not seem to disappear behind the distant buildings. It's image would appear to be "in front of" the buildings. And last but certainly not least, the image of the reflection of a model in a window cannot be less bright than the background since background light coming through the window would add to the reflected light from the model. The fact that the UFO image is darker than the sky means this is not a simple "reflection on glass" hoax.

1d. Similar problems arise if one imagines reflecting the background on glass with a lighted model farther away than the glass. In this case one could make the model seem to move behind the building. Simply place a black paper cutout on the back side of the glass where the building image appears. Now when the model moves behind the building image the light from the model will not get through. However, when the model is silhouetted against the sky there will be no portion of the model image that is darker than the sky.

1e. A "masked reflection" would also be "difficult". In this case a cutout with the shape and size of the reflection of the model is placed beyond the glass to block background light from coming through the glass where the image of the model appears. Motion of the model would have to be accompanied by similar,

perfectly registered, motion of the cutout.

1f. One big question is how to make a model UFO that is brighter than the dark building appear to move behind a building? Imagine being in the room where the video was taken, looking out through the window. One sees all the nearby and distant buildings. Then create a flat dark model cutout of the nearby buildings and set it up some distance, like several feet, from the window. The 2-D model building is therefore closer to the camera than the window and the camera is many feet from the window. However, the camera must be far enough away from the model building so that when videoed with full zoom the edges are still in good focus. (This sets size requirements on the room and window. See below.) Now take a small 3-D UFO model suspended in some way. Have it illuminated and painted or colored in such a way as to be somewhat darker than the sky brightness. Naturally this model must have black spots on its rim and must be rotating and wobbling in a steady manner. This, and the onset of motion acceleration) would require a support which is reasonably rigid. Perhaps a mechanism inside the model would create the rotation and wobble (wobble about 3 times as fast as the rotation) and another mechanism on the floor would drive the horizontal and vertical components of motion of the support once the "UFO" starts to move. In this case the model UFO could move behind the model buildings in a convincing manner. This method would require some effort at model building, including construction of a mechanized model UFO and support system, alignment of the model buildings with the real buildings as seen through the window (I assume there really are buildings at the locations indicated in the video!), and, finally, careful videography with appropriate lighting (not easy!) using a handheld camera. It might also be necessary to shoot the scene from a room with a large window and to use a special lens on the camera so that the unzoomed view does not show the edges of the window.

As mentioned above, the distance from the camera to the (flat) model buildings must be large enough so that the edges are in good focus. This sets a minimum size requirement on the room that depends upon the zoom magnification. A reasonable guess is that to have the distant buildings in good focus and the presumed nearby model buildings also in good focus would require a distance from the camera to the models of 20-50 ft. this requirement, in turn, sets a size requirement on the window. It must be large enough so that the window edges do not appear in the picture at the beginning when unzoomed.

1g. An even more expensive and time consuming way is to "bring the whole scene into the studio." That is, create a model of the whole scene as viewed from the window under hazy conditions. This would be extremely complicated and sophisticated. A model of the scene could involve models of the nearby buildings and, as a background for the distant buildings, a large photograph of the real scene, like a "diorama." A UFO model would then be supported in some invisible way at a distance from the camera that is greater than the distance from the model buildings and then of course, it would be "easy" to make it move behind the model buildings.

The UFO model would have to be supported in a manner such as described in 1f above in order to make it move, rotate and wobble without introducing a swinging motion characteristic of a model suspended on a string. If the model were supported by a transparent rod, for example, a mechanism could be devised to make the model rotate and wobble as seen. A lightweight model on a rigid rod would accelerate quickly with little wobble or vibration. This might also necessitate some special optics (lenses) for the camera to make the zoom compatible with the likely short distance (5 - 20 feet from the camera to the diorama). An actual haze effect could be synthesized by using as a background a large photo taken on a clear day and then blowing water vapor or fog into the model scene to create the reduction of contrast inherent with haze.

However, to make this convincing several model buildings at different distances would be created within the diorama. But this would require sophisticated model building, a mechanical operating system for the model and its motion, considerable time and considerable expense.

So far, the bottom line on the hoax possibility using a model is that it probably could be done, but would require a considerable

effort and expense.

2a. How about the possibility of an electronic construction? In this case one imagines a video of the background scene with the UFO image added in electronically. Because the image jiggles right along with the images of the buildings, this hand-held jiggle must be somehow deduced by the software frame by frame and then added to the frame-by-frame location of the UFO image.

2b Alternatively one might imagine that the scene was shot with a tripod mounted camera showing the more of the scene than actually appears in the video. This sampling of the scene was at high resolution (many pixels). The scene was a single, stationary frame. This single large frame was copied many times (about 700). Then the UFO image was added frame-by-frame. About 700 frames were created which show the UFO image first stationary and then moving frame by frame to the right and upward at a constant speed. On a frame by frame basis the UFO image was partially "erased" in a ste-by-step manner as it "moved behind" the image of the first building, and then it was "created" as it seemed to appear from behind the building. After the series of frames with the UFO had been created, then the dynamics of the camera vibration and panning were simulated. One can imagine this was done by making a frame-by-frame mapping of the first (700) frames onto a second series of about 700 frames. Each of the second series of frames was a subset of the first, i.e., a smaller frame size (fewer pixels). Initially in the unzoomed section the new frames were about the same size as the orignal frames. However, the zoom was creased by using "pixel magnification" and this justifies using high pixel resolution in the first set of frames. The center of each new frame is a "semi-random" location relative to the center of the original frame in such a way that the centers of the new frames wander about the original frame center to synthesize camera vibration. Once the UFO image starts to move in the original frames, the mean center point of the second series of frames also begins to move in a "random walk" manner characteristic of a hand-held panning camera. One can imagine that by using a method such as just outlined the video wwas constructed. Naturally this would require very sophisticated computer based image construction...Hollywood level, probably.

COMMENT ON HOAX HYPOTHESIS: there may be other techniques not mentioned above. However, it would seem that if this was a hoax then it was extremely well done. Of course, no method except the full scale UFO hoax with a real object thousands of feet from the camera would create bonafide witnesses. Hence if there are witnesses and it can be proven that they have no relationship to the video, then this can be labelled a real event! The video might be able to stand on its own even in the absence of witnesses. However, it is difficult to imagine something as obvious as a 25-50 ft UFO flying close to city buildings would be noticed by only the videographer.

RELATION BETWEEN ROTATION AND WOBBLE:

The continuous dynamic motion of the UFO is intriguing. If a hoax the constancy of the motion implies some motor driven mechanism that keeps the rotation and wobbling steady.

However, if not a hoax....

Assume the UFO can be modelled as a rotating solid disc of some mass m. The average or mean axis of rotation is assumed to be (nearly) vertical. However the instantaneous axis (the spin axis at any particular instant) does not appear to be vertical. If you imagine the spin axis as a line, this line appears to make an angle with the (assumed) vertical mean axis. This angle may be (seems to be) constant. As time goes on this line sweeps out - or lies "on" - a cone shaped surface in space, with the apex of the cone at the center of the disc. (Note: The earth has a "wobble" or precession such that the instantaneous spin axis of the earth rotates about the average spin axis every 26,000 years (about).)

If the wobble is actually a uniform precession of the spin axis, as with a gyroscope or any spinning body, then there must be a torque (twisting force) acting on the disc in a direction always perpendicular to the spin axis (if not perpendicular, the torque would change the spin rate as well as the precession rate). There is a "simple" (nothing is simple!) approximate relation between the torque, the precession rate and the spin angular momentum: T = PM, where P is the angular rate of precession (in radians per second; 2 pi radians = 360 degrees), T is the applied torque and M is the angular memomentum about the spin axis. For a uniformly thick disc of mass m, M = (1/2)msr^2 where s is the spin rate

(in radians per second) and r is the radius. In this case s is
about 1 rad/sec and P is approximately 3 rad/sec. Unfortunately
there is no way of knowing what the effective mass of the UFO
might be. Nor is there any indication of what the torque might
be. If we knew either or these we could calculate the other and,
perhaps, learn something interesting. This torque might be a
result of a huge magnetic field associated with the UFO being
acted upon by the magnetic field of the earth, although
considering that the spin axis is nearly vertical it would seem
that only the vertical component of the earth's field would be
involved. It might also be a torque applied by the UFO to itself
in some way to maintain the orientation of the UFO relative to
the local earth surface as the earth spins.

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