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Research on Characteristics of Transmission Ratios of the Human Body's Nonsight Light Sensing

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The authenticity of the existence of a human body "non-sight sensing" system has acquired the strict appraisal and acknowledgment by many authors. Then, how does this system transmit signals through a space? What are the characteristics of such transmissions? All these merit being questions for our research. Application of the Foulier (phonetically transliterated) theory in analyzing space signal transmission systems (simply called "system" hereafter) is a new method developed in modern times. In practice it has been proven that this method is one that synthesizes evaluation and description of the "system" that is relatively comprehensive and objective; thus it has become widely used in optical systems, televideo systems and even concerning the human eye. We are of the opinion that a "nonsight sensing" system is also a space signal transmission system, so similarly can apply the Foulier theory in conducting its research. The content in this article's report is then an initial attempt in such research.

PRINCIPLES AND TENETS

It would be difficult to express the implications of using the Foulier theory to analyze the "system" in a few short words. Here, we have merely made a simple introduction of concepts relevant to this article. All mathematical probes have been omitted. If a detailed understanding of the contents in this area is desired, please consult the documents footnoted as (1) and (2).

We know that signals through a space as illustrated in the figures (whether three-dimensional or planed) are derived from the distribution of light intensity in a space. Therefore, the process of a "system" transmitting signals through the space consists of the "system" distributing light intensity on the surface of an object, which transforms into a process of distributing the light intensity over the surface of an image. What is called "object" is the goal for the "system's" observation. What is called "image," however, follows the variances of the "system" and changes accordingly. For example, the "image" in optics is an "optical image," that of a televideo system is an image on a fluorescent screen. As to those of human "sight sensed" and "nonsight sensed," their images are "sight-sensed images." In any event, we can regard the light intensity on the surface of an object as an input of the "system," and that of an image surface as output. From people's experiences, we can know that, except for a hypothetical "system," signals going through a space might undergo changes after being transmitted by a "system;" while the light intensity distributed on an image surface cannot completely correspond to that on an object, such lack of consistency results in a "system's" loss of fidelity after transmission in clarity of the figure. With respect to "sight-sensed" and "nonsight-sensed," this kind of inconsistency created various dissimilar visual reactions, such as "sighted," "unsighted" and "incorrectly sighted," etc. Therefore, if the relationship between the "system's" input and output of "light sensitivity distribution" can be completely unearthed and described, then the characteristics of "system" transmission of signals through a space can be completely illustrated. This is the goal and mission of using the Foulier theory to analyze the "system."

When actually using the theory to analyze the "system," there are normally two ways to express and prove the nature of the transmission mathematical functions; these are the Modulated Transmission Functions (MTF) and Comparative

Transmission Functions (CTF). What is called "MTF" is the "system's" response to the broadcast frequency of sine wave vibrations in a space. "CTF" is the "system's" response to the frequency of rectangular-shaped waves vibrations. MTF can be used to provide a cascaded evaluation of the "system;" it does not work with CTF, but because it is relatively convenient to measure, the latter is often used. Based on our experiment conditions, we used the CTF type of transmission mathematical functions in our initial steps of research.

It has already been mentioned above that CTF is the "system's" response to the vibration frequencies of rectangular waves. What then, is a "rectangular-shaped wave"? What is a "space frequency"? What is meant in the expression of size of "vibration amplitude"?

What is meant by a rectangular-shaped wave in space is a series of similar and repetitive black-and-white bars of light intensity (see Figure 1, left). If a right-angle graph is used to describe the distribution of such bars of light intensity in a space, then it would look like what is shown at Figure 1, right. It can be seen now that the light intensity distribution in a space takes on a rectangular shape, and that is how the name came to be.

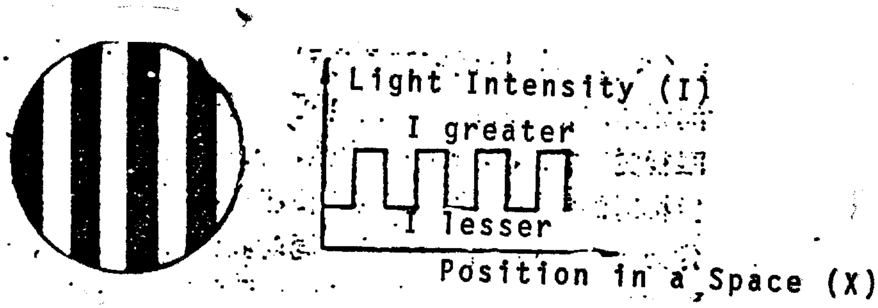

Figure 1. Rectangular Wave Light Bar and Its Light Intensity Distribution in Space

What is called space frequency of a rectangular wave is the numerical unit distance of the stripes on the bar; the more numerous the stripes showing distances, the higher the frequency expressed. Conversely, the fewer the lower.

The expression of the rectangular wave vibrations in space is called the "comparison ratio," and is defined as:

$$K(n)=\frac{I\ greater-Ilesser}{I\ greater+Ilesser} \quad (1)$$

K(n)-------ratio n-----frequency

Igreater-----Greatest value for light intensity on the bar

Ilesser------Least value

It can be seen that, when K(n)=1, then Igreater must be 0, which clearly states that the light intensity of the black stripes is 0. For this reason, the ratio of the rectangular wave at this time is the highest. When K(n)=0, then Igreater=Ilesser, clearly stating that black and white stripes are equal, and the ratio at this time would be the lowest. It can thus be seen that what the ratio expresses is the light intensity distribution of the rectangular wave in a space; so if one wants to examine the nature of light intensity transmission of rectangular waves stripes in the "system," it would only be necessary to calculate the "system's" input and output ratios. This would lead to the Comparative Transmission Functions defined as:

$$CTF=C(n)=Ki(n)/Ko(n) \quad (2)$$

From (2) above we can be see CTF represents the system's transmitting capability for rectangular waves in a space; it is the mathematical function for that frequency in a space. The higher the C(n), the higher the transmitting capability of the system for the rectangular wave with frequency n. The converse is also true. Thus, if all the frequencies' transmission ratios (C(n)) can be calculated, it will illustrate the system's transmission capability for all the frequencies in a space; and calculating the F will tell what frequencies can pass through the system, and which will have difficulty or find it impossible to do so; also, which are the best for transmission. Here, we have given CTF a rough introduction; its total significance is not so limited.

But when calculating the CTF for a "nonsight sensing" system, we met a difficulty; there was no way to calculate directly the ratio for imagery. Although, fortunately, CTF calculations have long been applied in visible "sight sensing," there had been no way to calculate CTF for imagery there either. Therefore, what could be done in CTF calculations in visible "sight sensing" systems can be imitated in "nonsight sensing" as well. The specific method is, where Ki(n) is a constant, then formula (2) can be written as:

$$CTF=C(n)=constant/Ko(n) \qquad (3)$$

What formula (3) expresses is that it is only necessary to restrict the imagery ratio to a constant, and the frequency for each object ratio could be calculated, then CTF will be obtained. As to "nonsight sensing," Ki(n)=constant expresses that the tested person can only discover the imagery ratio that is sought. For the sake of convenience, the constant for each imagery ratio was reduced to "1"; at the same time, we called the object ratio a threshold ratio of Kot(n). Thus we have:

$$CTF=C(n)=1/Kot(n) \qquad (4)$$

Thus, by calculating the frequency as Kot(n) for nonsight light sensing, we can obtain the CTF for it.

APPARATUS AND METHOD

Figure (2) gives the apparatus tenets in our experiment. S is the board for the various frequencies of rectangular waves. Under the even illumination of light source (I) which was composed of light E and lens C1, with semi-transparent lens N casting objective lens L's image upon frosted glass screen G, even layers of light were formed on the rectangular wave stripes. P1, P2 and P3 were three polarized plates; P1 and P2 were perpendicular to each other because the energy from light source (I) and (II) were similar; because of this, rotating P3 could cause the rectangular wave stripes shown on the frosted glass screen to have different ratios. About 2-3 millimeters in front of the glass screen G, an opaque sheet of black paper was placed to obstruct the sight of the tested individual; because of this, during the experiment, there was no way that any changes in the images and the ratios shown on the frosted glass screen G could be seen by the tested person. The palm of one of the tested person's hands was so placed as the "nonsight sensing" tool to ensure that what the person "nonsightedly sensed" was definitely the object optically imaged on the frosted glass screen. For this reason, imaged and non-imaged tests were done on the screen; the tested individual correctly reported on each one.

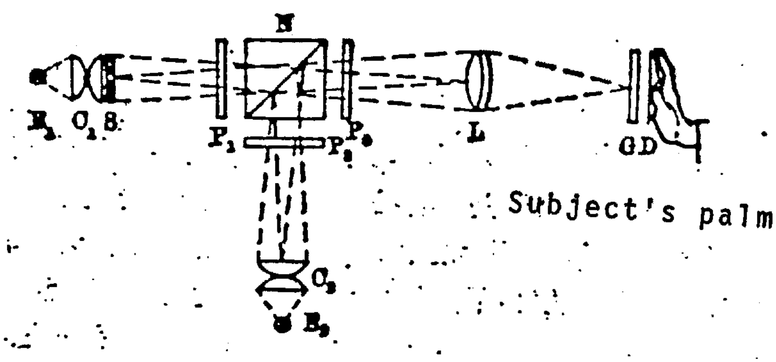

Figure 2. Apparatus Tenets Diagram

During the experiment, the tested person was directed to touch the black paper, then the testing personnel inserted a rectangular-shaped wave light board with a fixed frequency, then rotated polarized plate P3 adjusting the ratios of the screen G's rectangular-wave stripes, and began testing. Such adjustments were of two types, one from low to high until the tested person first discovered the striped figures; this ratio was given a "threshold up" value. The other went from high to low, until the person no longer recognized the figure, which was given a "threshold down" value. Each frequency was tested six times, "threshold up"and "threshold down" each three times. They were then cumulatively averaged out to obtain the threshold ratio.

For this experiment, there were two tested females with nonsight sensing capability, Little Ping (age 12) and Little Qiang (age 14).

The frosted glass screen for the experiment was round, had a diameter of 55 millimeters and a brightness of 10 Nt.

RESULTS AND DISCUSSION OF NONSIGHT LIGHT CTF

Figure 3 shows the experiment's results, the vertical line represents inversely the values of threshold ratios. The horizontal line expresses the frequency in millimeter-line logarithm units. What is obtained is an experiment curve which constitutes the CTF curve for a human body's nonsight light sense. And, to compare it to the CTF of sight light sense, the CTF curve of the human eye was also drawn into Figure 3. It can be seen from this graph that the shapes of Little Ping and Little Qiang are similar to each other, thus showing that the CTF characteristics of the hand's palm in each of their nonsight light sense were similarly prescribed. Elaboration and discussion of the experiment results follow:

1. The experiment results show that the human body's capability to transmit rectangular-shaped waves of nonsight light through a space definitely is a frequency mathematical function; different frequencies have different values of C(n)=1Kot. Going one step further into its study and observation, it was discovered that the CTF curve obtained was low at both ends and high in the middle, making it clear that the "nonsight light" transmission capability in the rectangular-shaped waves in the figure were reduced or weakened at both the high and low ends, but there was a best frequency response and wide scope. We call this

"throughput" characteristic. What the test learned was that the best frequency for both tested persons was in the vicinity of the 0.2 millimeter line.

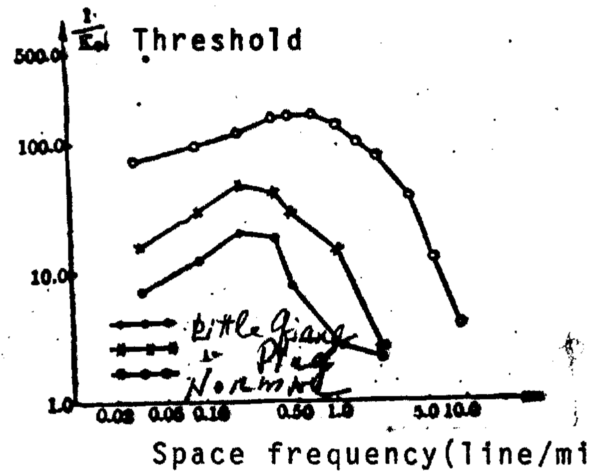

Figure 3. Experiment results and Normal eye CTF curve
(eye curves from footnote (4))

2. From formula (1), it can be learned that the greatest value for Kot(n) was 1; therefore, as the frequency increases, the lowest value for the decline of the CTF curve would also be 1. This space frequency was called the interception frequency; it expresses that any frequency higher than this kind could not be sensed by the person with "nonsight light sense." Due to the constraint of this condition, we have not been able to calculate the interception frequency, but from the outward bulge of the curve, we can estimate the interception frequency of Little Ping's and Little Qiang's "nonsight sense" frequency to be in the vicinity of the 3-5 millimeter line.

3. In comparing the CTF curves of "normal eyesight" and "nonsight light sense," one can see that the forms are similar; both have the "throughput" characteristic, but the frequency deterioration for "nonsight light sense" at the lower end was much stronger than that for "normal eyesight"; therefore, its throughput characteristic was more apparent than that of the normal eye. We know, from researching the human eye that this characteristic was produced from the nervous system of the human eye's light-sensing system. Then

how is that of the "nonsight light sensing" system produced? This is a question meriting research; comparing the scope of their frequency response, the "normal" eye is wider than that of the "nonsight light sensor." In comparing 1/Kot(n) values for the same frequency, the normal eye's is higher. From this, one can see that our tests show the two individuals' "nonsight light sensing" transmission characteristics to be weaker, clearly stating that the ability of those with "nonsight light sense" as not as strong as those with normal sight.

We know from the Foulier theory, that CTF and MTF calculations are convertible to each other (1):

$$\mathrm{MTF}=M(n)=\pi/4\left[C(n)+\frac{C(3n)}{3}-\frac{C(5n)}{5}+\frac{C(7n)}{7}\cdots\right] \qquad (5)$$

$$\mathrm{CTF}=C(n)=\frac{4}{\pi}\left[M(n)-\frac{M(3n)}{3}+\frac{M(5n)}{5}-\frac{M(7n)}{7}\cdots\right] \qquad (6)$$

Therefore, if we know the "system's" CTF, then we can calculate its MTF. From this, we know that the rectangular waves higher than the interception frequency cannot pass through the "nonsight light sensing" system. From the above, it can also be known that "nonsight light sensing" interception frequency beyond the push of the curve is not very high. Thus can be seen that the "nonsight light" CTF curve we tested can be applied similarly to the MTF.

DISCUSSING THE EFFECTS OF THE NONSIGHT LIGHT SENSE

Measuring "CTF" is the most important content of this article, but after going through this experiment, we looked at the following points, which provoked our attention:

1. During the experiment, the rectangular-shaped wave stripes sensed by nonsight sensors were the optical images on the frosted glass screen, and not those produced by the optical light board of the apparatus (i.e., S of Figure 2). Aside from this having already been proven in Section 2's "imaged" and "non-imaged" experiment, the CTF experiment itself in this article actually also has proven it. Just think, if what the nonsight sense felt was the optical image from the light board and not from the screen, when the P3 in Figure 2 was rotated, we could not have obtained any threshold ratio, nor could we have obtained a CTF curve for the "nonsight sense."

From this can be seen that, in this experiment, the optical image acquired from light was sensed by the "nonsight sense."

2. The rectangular wave space signal carried by this optical image also could let a nonsight sense have reactions similar to those of normal sight sense. (Section 3 above).

It can be clearly seen from these two points that this experiment, at a definite level, expresses that space signals formed by light intensity distribution can evoke sensing reactions from "nonsight" and responses similar to those of sight sensing.

But, it can be seen from Figure 2, that the placing of a sheet of black paper between the hand and the optical image naturally could raise this kind of question: how does light, obstructed by the paper, affect the "nonsight sense"? This question requires special research. Speaking from the present, we can only report to everyone what we have observed and studied of this phenomenon; we still do not as yet know how light affects the nonsight sense.

In researching nonsight sense, nothing caught the attention of everyone more than the question of what were the signal carriers. This is a basic question that must be answered in resolving the nonsight sensing process. Furthermore, the question raised here about the relationship of light affecting nonsight sensing, clearly is related to the research of signal carriers (and not just limited to similarities). Actually, in the already reported research on nonsight sense reaction to monochromatic colors, it was shown that the nonsight light sense reacted to light, and could produce the same reaction to color as a sight sense. Therefore, it is a very intriguing question for reinforcing research into whether mankind (or at least part of it) has a nonsight sense that co-exists with a sight one, and also clearing up its various characteristics and process.

Due to the fact that Man's nonsight sensing places are not just the palms, but under the arms, at the ears, etc., and also because the capabilities of individuals with the nonsight sense vary rather greatly from person to person, therefore, the report content in this article is not a finalized description, offered only for research reference.

(1) Mai Weilin, Optical Transmission Functions and Its Mathematical Foundations, Defense Industry Publishing House, 1979

(2) Radio Corporation of America, Electro-Optics Handbook, 1974

(3) Wang Shengli, et al, Nature Magazine, 3 (1980) 336

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A First Look at the Human Body's Nonsight Sensing Capability to Sense Optical Imagery in Space

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A number of experiments report that light can evoke reaction from the human body's nonsight sensing. For example, the capability of nonsight sensing of monochromatic colors. Also, for example, when nonsight sensing falls upon optical images of diffused reflections, it can cause a change in the sensing ratio. To go one step further in the study of the effects of light on nonsight sensing, we conducted tests of the human body's nonsight sensing capability to sense optical images directly in space. Results show that those tested had a definitive sensing capability for the imagery formed in space optics at nonsight sensing places (primarily the palm of a hand).

METHOD

Figure 1 shows the light path of the test apparatus. In it, light E and focal lens C formed the illumination source, evenly projecting on film O. With a fountain pen, various labels were written on the film. The labels on film O were passed through lens L on to the palm of the tested person, forming various optical images through the space to be differentiated by the tested person. To prevent normal eyesight from being mixed into the differentiating process, the entire apparatus and the tested person's nonsight sensing part (the palm) were hidden inside a cover.

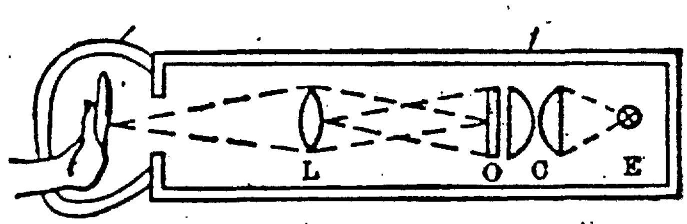

Figure 1 Diagram of the Experiment Apparatus Tenets

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Those tested were three females with nonsight sensing capability, Little Ping (age 13), Little Lin (age 10) and Little Bo (age 10).

The experiment proceeded with three kinds of tests: the first one made the tested person tell the difference between optical images projected directly upon her palm; the second asked her to differentiate between degrees of changes in the size of the images on the palm; the third put the tested individual's palm on the image's unfocal surface, and then when the image was projected on it, she was asked to describe the sensation unseen by her eyes.

RESULTS

1. In the test of direct projection of the image on the palm, Little Bo was tested 17 times with a 64% accuracy; 24% partial accuracy; 6% completely wrong and 6% with no sensation at all. Little Ping went through eight times, and was 51% completely correct; 12% partially; 12% completely wrong and 25% without sensation. Little Lin did it 13 times, was 38% completely correct; 23% partially; 15% completely wrong and 23% without sensation.

The results of images changes on the palm were: Little Bo, seven times and could point out the size changes every time; Little Lin four times, and could tell the changes every time. Little Bo's palm was placed on the nonfocused surface three times, and reported that "it was a blur, could not see the images."

From the light paths of the test apparatus described above, the reader might point out that, during the experiments, the images differentiated by the tested persons might not have been "space optical images," but rather were "film O images" because both images were identical and both were presented on the palm. However, the results described above can prove that what was differentiated were definitely "space optical images." The reason is that, if not, the test person could not have pointed out the differences in size changes, and also, when the tested person's palm was placed on the unfocal surface, she could not have had a "couldn't see the image" reaction. Therefore, space signals carried by space optical images let our test individuals' nonsighted senses feel them.

2. While differentiating between "space optical images," Little Bo said that the word shapes first appeared in her brain a bit at a time, then formed into a complete entity. For the word, "刀" (knife), first appeared "フ," then appeared "亅," and then were put together to become "刀." And again, for example, "六" (six), the order of appearance of forms was "丶," "一," "丿," "丶," with "六" finally put together. The circumstances described by the tested person greatly resembled those told by her about the forms written on paper which she had had to differentiate.

3. Looking at the time required by the tested individual to differentiate between the "space optical images," and that needed to differentiate between words written on paper, there were clear discrepancies. But when as subjectively narrated by the tested person, it took more time for the "space optical images" than to do those on paper.

DISCUSSION

The fact that light energy evokes sensing response from nonsight sensing, is a problem that merits serious attention to researching such. It is well known that light is the carrier for sight sensing. Then what are the effects of light as a carrier in nonsight sensing? Concerning this question, of course, at present, there can be no definite conclusions, but from the results of these experiments, and other test results involving light and nonsight sensing , it can be seen that the space signals carried by light, irrespective of the signals of light intensity distribution, or light being

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COMMENTS

TRANSLATION

The beginning of another article "A First Look at the Human Body's Nonsight Sensing Capability to Sense Optical Imagery in Space" is included.

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