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CORRELATION BETWEEN THE UFO PHENOMENON AND ITS ASSOCIATED ENTITIES

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"The UFO problem is enormously complex,
and there are no simple answers."

Antonio Ribera, Encuentros con Humanoides
(Encounters with Humanoids)

INTRODUCTION

The scientific approach to the UFO phenomenon poses special difficulties, as a consequence of two special characteristics of its manifestations: the events that witnesses report are difficult to verify, due to the chance nature of their occurrence, and, moreover, it is not possible to submit the phenomenon to laboratory analysis.

It would appear that for vast segments of the population, the subject of UFOs has become a question of faith, given that for them it simply deals with belief in its reality. Nevertheless, some professionals and students of the most varied branches of science have come to understand that it becomes necessary to try to interpret, catalogue, and clarify this type of phenomenon, which, due to the persistent abundance of testimony of extraordinary and strange events, remains in force.

The tremendous weight of evidence collected on the presence of this phenomenon in the contemporary world (hundreds of thousands of accounts, from one end of the planet to the other), allows any analyst of the subject to reasonably place himself on the side of accepting the physical reality of UFOs. Observations made by first-class witnesses (scientists, professional people, pilots, et al.), photographs and films, traces and residue, detection by sensors such as radar and magnetometers, and the repetition, in thousands of accounts, of certain standards of general behavior, appearance, and structure, are the elements that permit the adoption of this position.

And, after accepting the reality of the UFO phenomenon, there arises, as a logical consequence, the occupant phenomenon. Concerning the latter, after a thorough analysis of the accounts of close encounters with UFOs, along with the observation of their occupants and the

parallel analysis of abductions, it is concluded that these beings present a morphology similar to that of humans.

If the UFO phenomenon is truly strange, the existence of the occupant phenomenon is even more so. Therefore, we think it is valid to pose the question whether the two phenomena are connected by some type of intrinsic coherence, and, in this manner, bring one more element of judgement by which to interpret such manifestations.

In the first part of this work is presented the set of cases considered for the purposes of the study that will be carried out in the second part. They will be presented in chronological order. The criterion for selecting the cases is simply the inclusion in them of the data of shape, diameter, and height of the UFO, and of the height and number of related entities, whether inside or nearby.

We should point out that the cases utilized for this study have been extracted from the UNICAT catalogue worked out by researchers Dr. J. Allen Hynek and Dr. Willy Smith.

In what follows, we will try to find an answer to the previously-posed mystery, attempting to analyze the possible connection between the UFO phenomenon and the anthropomorphic entities associated with it, trying, in this manner, to establish the degree of correlation that exists between them.

PART ONE -- CASES

UNICAT CASE NO.	DATE*	LOCAL TIME	PLACE	COUNTRY
538	500318	17:30	Lago Argentino, Santa Cruz	Argentina
438	530701	14:00	Villares del Saz, Cuenca	Spain
510	571016	24:00	San Francisco Solano, Minas Gerais	Brazil
457	640424	10:00	Newark Valley, New York	U.S.A.
552	650720	08:00	San Francisco Solano, Buenos Aires	Argentina
493	680825	20:00	Aldaya, Valencia	Spain
425	680911	23:45	San Martin de Tous, Barcelona	Spain
454	721028	22:00	Isla de Lobos, Maldonado	Uruguay
453	731011	21:00	Pascagoula, Mississippi	U.S.A.
572	760128	00:30	Benacazon, Sevilla	Spain
579	781000	22:00	Fuzeta, Faro, Algarve	Portugal
503	790725	11:30	Turis, Valencia	Spain

*Dates are expressed as year/month/day.

PART TWO -- ANALYSIS

As was anticipated in the Introduction, now we will get down to analyzing the information provided in Part One, with a view toward determining if there exists a correlation between UFOs and their occupants.

The data stated in the cases listed in Part One that are to be considered for our purposes were used to design Table 1, "Summary of Information." It should be explained that in each case the morphological descriptions of the UFOs have been reduced to their corresponding geometric shapes. These equivalencies are made explicit in Table II, "Equivalency of Shapes."

At this point in the analysis, it is relevant to point out the following:

1. That the variables of diameter, height, and shape of the UFOs, on the one hand, and the variables of height and number of entities, on the other, are linked to each other by the mere fact that they are related observationally, the accuracy of this depending on the correctness of the observer's appraisal.

2. That this relationship depends on a combination of factors that are uncontrolled, or, more precisely, unknown.

The law of distribution between the values of diameter, height, and shape of the UFO and of height and number of its associated entities corresponds to unknown aspects of the structure of the UFO phenomenon, which makes it necessary to employ as a substitute an empirical function, such as that provided by the method of least squares. Starting with this concept of fitting the best line to the data, it has been sought to establish a functional relationship between said values, such that it represents, in the best possible manner, its law of distribution.

For this purpose, twelve cases have been selected, ones in which the values of diameter, height, and shape (of the UFO) and height and number (of the entities) appear; these are included in Table 1, "Summary of Information." It is evident that to achieve a more accurate determination, a much greater number of cases would be required.

The number of variables that have been considered would make the analytical development of the problem very complex, so it is necessary to process the data to obtain pairs of values that can be compared, achieving as a result, a simplification of the terms at hand, without their losing their initial significance. For this purpose in Table III the "Formulas of UFO Volumes" were determined, following the geometric shapes established in Table II.

To establish the volumes of the associated entities, the anthropomorphic values that appear in Table IV were adopted, as a function of their respective heights. Table V, "Organization of the Information

for Evaluation," includes the values of the volumes of the occupant entities (P), in cubic meters; the number of them that were seen (c); the occupying factor (Q), in cubic meters, which was obtained by multiplying the value of (P) by the value of (c), that is to say, $Q = P \cdot c$; and the volume of the UFOs (R) in cubic meters.

With the values of Q and R that were found, the linear regression was determined by the method of least squares. Q is a function of R, thus Q=f(R).

The linear regression function turned out to be:

$$Q = f(R) = 0.0023083\ R + 0.30537$$

It is known that, in a distribution such as that which corresponds to N = 12 cases, the "standard deviation" represents the degree of fluctuation or dispersion around the arithmetic averages of Q and R.

The values of the arithmetic averages of Q and R are:

$$\bar{Q} = 0.47725\ m^3$$

$$\bar{R} = 74.462\ m^3$$

In short, the standard deviations of Q and R turned out to be:

$$S(Q) = 0.36025\ m^3$$

$$S(R) = 136.513\ m^3$$

We will next study the relationship between Q and R, which are two variables statistically linked together, but, as was stated in the Introduction, they depend on a set of unknown factors. The greater or lesser correlation between the two variables will be verified as a function of the greater or lesser density of the scattering of data around the regression function that was found, which is rectilinear.

This is measured by the "coefficient of correlation" (r). The coefficient of correlation should be interpreted as a relationship between two variables, under a purely mathematical point of view, which show a distribution of functional correspondence, in the sense of supposing between the two the existence of a direct or rectilinear correlation. When r is 0, there is no correlation, and when its value is different from 0, there is a correlation, even though it may be only a theoretical one. When it reaches its greatest value, 1, we have a functional relationship.

After a straight-forward but lengthy and tedious statistical calculation, r turned out to have the value of 0.875. Given that the coefficient of correlation (r) possesses the advantage of measuring by itself the intensity of the association between the variables, it is evident that the value obtained (r = 0.875) makes clear the existence of a true connection between the variables Q and R. Likewise, the

ideal value of r being 1.000, the result is very satisfactory, because the "coefficient of determination" (R^2), which for this linear-function case fulfills the equality $R^2 = r^2$, and permits the study of the goodness of the model utilized, is fairly high, greater than 0.75. That is to say, if r = 0.875, then $r^2 = R^2 = 0.765$.

CONCLUSIONS

Without regard, at first, to any particularity in the geographic distribution of the encounters nor in their historical sequence, which confirms the chance nature of the sample in Table I, it can be inferred, a priori, that there is a linear relationship between the volumetric dimensions of the UFOs and those corresponding to their occupant entities.

As was established with the determination of the values of S(Q) and S(R), all of the UFO volumes are within 1 S(Q). It should be noted that, in practice, this measure is frequently considered as the interval within which approximately two-thirds (68%) of the values will be found, if the dispersion is normal.

Taking into account the standard deviations and the arithmetic means that were obtained, it is possible to determine the "coefficients of variation" (or relative measures of dispersion), of the Q and R values from Table V.

$$CV_Q = \frac{S(Q)}{\bar{Q}} \cdot 100\% = 75.49\%$$

$$CV_R = \frac{S(R)}{\bar{R}} \cdot 100\% = 183.33\%$$

Judging by these values, the relative dispersion of the occupying factor is less than that corresponding to the UFO volumes. Likewise, in the set of cases under consideration it can be affirmed that the data on UFO volumes are more heterogeneous.

The question formulated in the introduction referred to the possibility of a coherent connection between the UFO phenomenon and the occupant phenomenon. Reducing the problem to mathematical terms, it was a question of the correlation between the Q and R values. What is the meaning of such a relationship? Analyzing the question in more depth, it can be interpreted that the closest relationship is the one that is formulated in terms of "containing-contained," from the point of view of the supposed capacity of transporting the entities that the UFOs would have. In short, it is verified that, in all cases, the UFO (the containing element) is larger than the entity (the contained element). Even in the hypothesis that questions the reality of the phenomenon, interpreting it as the product of the witness's subconscious, said product and its previous mental elaboration turn out to be coherent. The difficulty for said hypothesis is that, until now, the phenomenon, in this particular facet of the problem, has not acquired the illogical nature that occasionally arises in dreams (or nightmares) of

the general run of people.

On the other hand, if the coefficient of correlation permits measuring the dependency between the volumetric variables of the UFO and those corresponding to the associated entities, in a field like ufology, where experimentation is little less than impossible, the correlation does not necessarily imply the existence of a cause-and-effect relationship. In other words, the variables can arise from a certain number of factors of diverse nature and their correlation can be motivated by an external cause. Then the following question acquires validity: Does the phenomenon induce some coherent presentation in the minds of the witnesses, or are we facing an objective datum, mathematically inferred from the incidents, through the corresponding testimony?

This second alternative of the objective datum, bearing in mind that the UFO phenomenon is apparently intelligent, allows us to infer, finally, that the intelligence that operates behind these appearances has conceived UFOs with the true capability of being occupied by the entities that have appeared inside them or nearby.

TABLE I

SUMMARY OF INFORMATION

UNICAT CASE NO.	GEOMETRIC SHAPE OF UFO	UFO DIAMETER (d) (meters)	UFO HEIGHT (a) (meters)	ENTITY HEIGHT (t) (meters)	NUMBER OF ENTITIES (c)
538	A	15	7	2	4
438	B	0.60	1.30	0.65	3
510	C	16.50	2.85	1.45	6
457	B	6.00 x 4.70	1.20	1.22	2
552	B	1.80	1.50	1.78	2
493	C	8	3.20	1.45	2
425	B	3	2	0.80	4
454	A	3	2	1.40	3
453	B	3	2.50	1.50	3
572	D	2.00 x 2.00	3.00	2	2
579	E	2	--	1.80	2
503	$\frac{1}{2}$B	2.50	2.20	0.89	2

TABLE II

EQUIVALENCY OF SHAPES

UNICAT CASE NO.	MORPHOLOGICAL DESCRIPTIONS OF THE UFOs	EQUIVALENT GEOMETRIC SHAPES	
538	circular	A	CONE
454	disc shaped		
438	egg	B	ELLIPSOID
457	airplane fuel tank		
552	small oval airplane		
425	oval shape		
453	ovalish craft		
503	half egg	B/2	HALF ELLIPSOID
510	circular object	C	PARABOLOID
493	tent	C	PARABOLOID
572	telephone booth	D	PARALLELEPIPED
579	spherical object	E	SPHERE

TABLE III

FORMULAS OF UFO VOLUMES

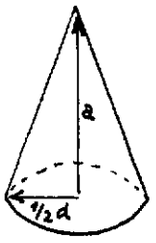
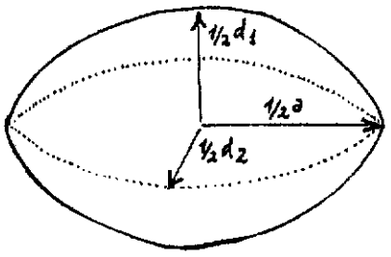
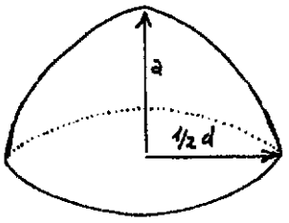
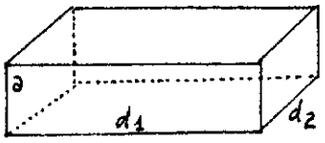
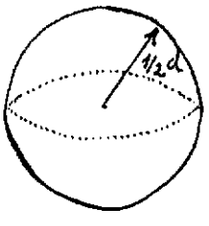
GEOMETRIC SHAPES			FORMULAS OF VOLUME
A	CONE		$V: \frac{1}{3} \cdot \pi \cdot (\frac{d}{2})^2 \cdot a$
B	ELLIPSOID		$V: \frac{4}{3} \cdot \pi \cdot \frac{d_1}{2} \cdot \frac{d_2}{2} \cdot \frac{a}{2}$
C	PARABOLOID		$V: \frac{1}{2} \cdot \pi \cdot (\frac{d}{2})^2 \cdot a$
D	PARALLELEPIPED		$V: d_1 \cdot d_2 \cdot a$
E	SPHERE		$V: \frac{4}{3} \cdot \pi \cdot (\frac{d}{2})^3$

TABLE IV

DETERMINATION OF THE VOLUMES OF THE ASSOCIATED ENTITIES

UNICAT CASE NO.	RANGE OF HEIGHTS	ADOPTED ANTHROPOMORPHIC VALUES	
		WIDTH OF SHOULDERS	DISTANCE BETWEEN CHEST AND BACK
425 438 457 503	0.65-1.22 m.	0.35 m.	0.20 m.
453 454 493 510 552 579	1.40-1.80 m.	0.45 m.	0.25 m.
538 572	2.00-3.00 m.	0.55 m.	0.30 m.

TABLE V

ORGANIZATION OF THE INFORMATION FOR EVALUATION

UNICAT CASE NO.	VOLUME OF ENTITY (P) IN m^3	NO. OF ENTITIES IN CREW (C)	OCCUPYING FACTOR (Q) IN m^3	VOLUME OF UFO (R) IN m^3
538	0.330	4	1.320	412.335
438	0.046	3	0.138	0.245
510	0.163	6	0.978	304.701
457	0.085	2	0.170	17.743
552	0.200	2	0.400	2.545
493	0.163	2	0.326	80.425
425	0.056	4	0.224	39.270
454	0.158	3	0.474	4.712
453	0.169	3	0.507	11.781
572	0.330	2	0.660	12.000
579	0.203	2	0.406	4.189
503	0.062	2	0.124	3.600

Figure 1

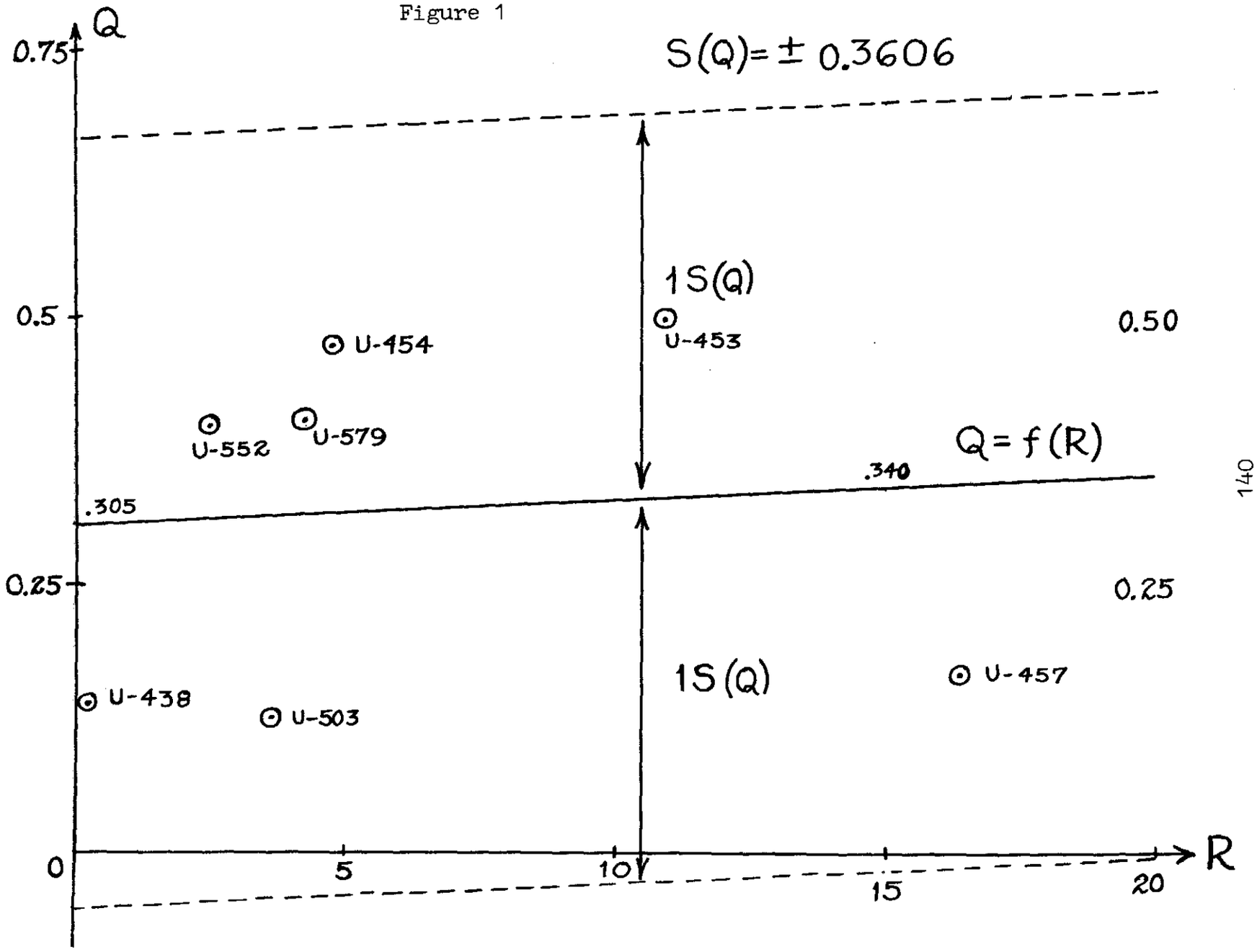
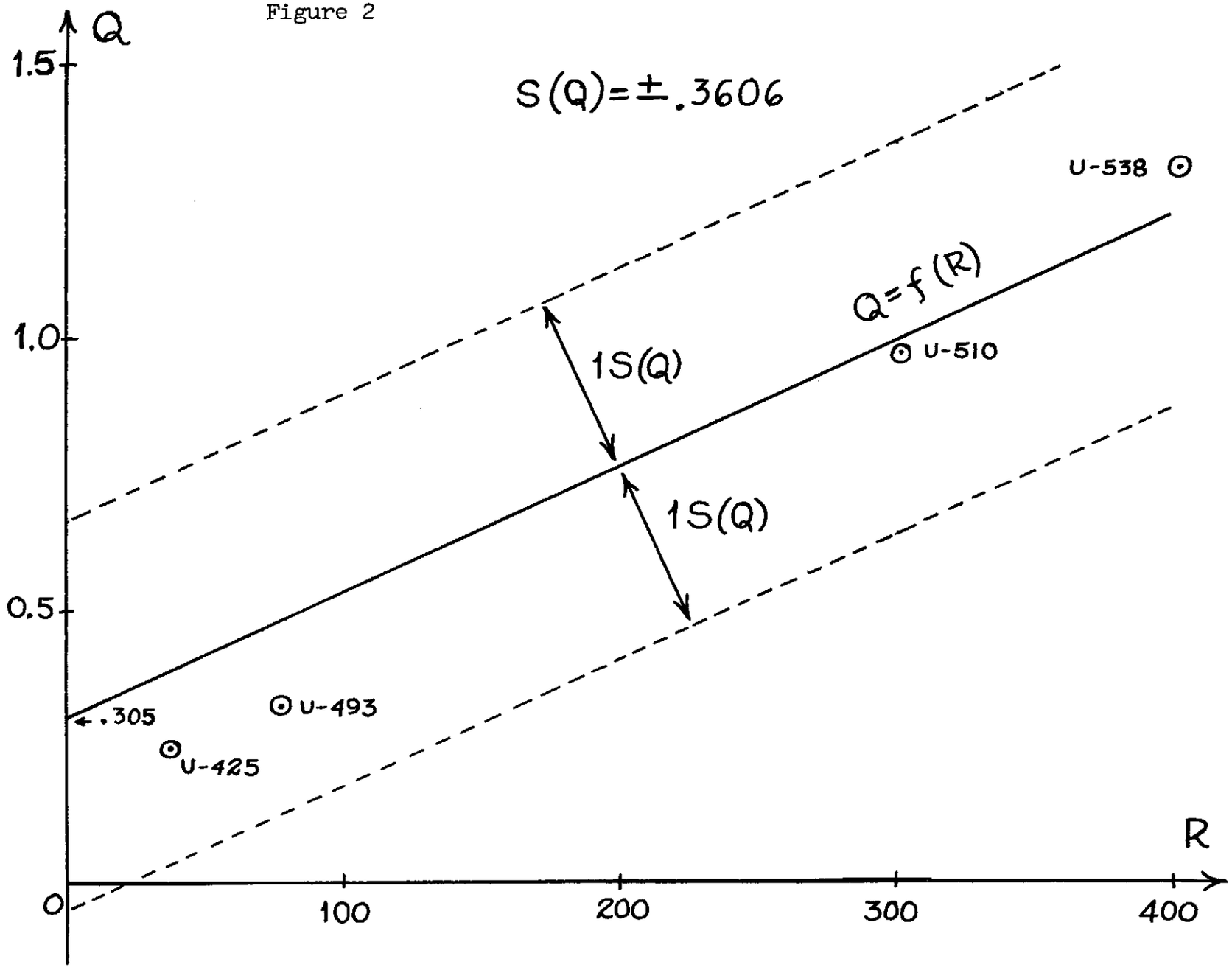

Q
0.75
S(Q)= ± 0.3606
1S(Q)
0.5
0.50
U-454
U-453
U-552
U-579
Q = f(R)
.340
.305
0.25
0.25
1S(Q)
U-438
U-503
U-457
0
5
10
15
20
R

Figure 2


Q
1.5
1.0
0.5
0
S(Q)=±.3606
U-538
Q=f(R)
U-510
1S(Q)
1S(Q)
.305
U-493
U-425
R
100
200
300
400