Chapter VIII: THINGS.

So far we have been dodging the question, What is a thing? Now that question must be faced. The first two sections will be devoted to determining what in general a thing is and what a thing commonly but mistakenly is supposed to be. In the third section we tackle the problem of the differentiation of things on the generic level and from an explanatory viewpoint. In the fourth we ask whether there are things within things. In the fifth we extend emergent probability to include an account, not of the origin of things, but of the immanent intelligibility of their numbers, differences, distributions, concentrations, developments, and break-downs. In the sixth we attempt an explanatory formulation of the notion of species.

1. The General Notion of the Thing.

Since the notion of a thing involves a new type of insight, we had best begin by recalling the main features of the old and now familiar type. It rested upon the presence or absence of laws governing the relations between data. Thus, experiential conjugates were reached by grasping the correlation between such terms as "red as seen" and "seeing red," or "heat as felt" and "feeling heat." Similarly, explanatory conjugates were reached by grasping the higher and more remote correlations that link and implicitly define, say, masses or the electromagnetic field vectors. On the other hand, probabilities were reached by arguing from the absence of system in the relations between data.

This attention to law and system led to a consideration of data, not in the totality of their concrete aspects, but only from some abstractive viewpoint. To employ an experiential conjugate is to prescind from all aspects of data except some single quality such as "red" or "hot." To employ an explanatory conjugate is turn attention away from all directly perceptible aspects and direct it to a non-imaginable term that can be reached only through a series of correlations of correlations of correlations. To speak of a probability is to suppose a process of reasoning that rests, not directly in what is given, nor positively on what can be understood in the given, but indirectly and negatively on what follows from a lack of system in the given.

Now the notion of a thing is grounded in an insight that grasps, not relations between data, but a unity, identity, whole in data; and this unity is grasped,

not by considering data from any abstractive viewpoint, but by taking them in their concrete individuality and in the totality of their aspects. For if the reader will turn his mind to any object he names a thing, he will find that object to be a unity to which belongs every aspect of every datum within the unity. Thus, the dog, Fido, is a unity and to Fido is ascribed a totality of data whether of color or shape, sound or odor, feeling or movement. Moreover, from this grasp of unity in a concrete totality of data there follow the various characteristics of things.

Thus, things are conceived as extended in space, permenent in time, and yet subject to change. They are extended in space, inasmuch as spatially distinct data pertain to the unity at any given instant. They are permanent in time, inasmuch as temporally distinct data pertain to the same unity. They are subject to change, inasmuch as there is some difference between the aggregate of data at one instant and the aggregate of data on the same unity at another instant.

Again, things possess properties and are subject to laws and to probabilities. For the very data that, taken concretely, are understood as pertaining to a single thing, may also be taken abstractly and so may lead to a grasp of experiential conjugates, explanatory conjugates, and probabilities. Because the data are the same, there results an obvious relation between the insights and between the consequent concepts. This relation is expressed by saying that the conjugates are properties of the thing and that the probabilities regard the occurrence of changes in the thing.

Again, the same relation is involved in what is named attribution. The concrete unity embraces a totality of aspects. From various abstractive viewpoints, other notions apart from the notion of the thing are to be reached. But because the same set of aspects yields both the notion of the thing and the other notions, the latter are related to the former and the relation, ~~xxsx~~ considered logically, is named attribution. Thus, to say that Fido is black or that he is a nuisance, is to conceive both a unity in a totality of aspects and some aspect out of the totality and then to attribute the latter to the former.

Again, Aristotle's syllogism aimed at putting an intelligible order into the attributes of things. In a given totality of data there is grasped a unity named the moon. In the same totality there is grasped a regular series of luminous shapes named the phases of the moon. In the regular series of phases one may grasp that the surface of the moon cannot be flat and must be spherical. Aristotle would name the moon the subject, its phases the middle term, and its sphericity the predicate. He would note that the middle term accounts for the attribution of the predicate to the subject. He would draw attention to the difference between a causa essendi and a causa cognoscendi: the phases are the reason why we know the moon is spherical; but the sphericity is the reason why the borrowed light of the sun is reflected from the moon in the regular series of shapes named phases.

Again, without the notion of the thing, there can be no notion of change. For a change is not just a newly observed datum, nor the substitution ~~of~~ of one datum for another, nor the creation of a datum that previously did not exist.

Moreover, there are no changes in the realm of abstractions, for every abstraction is eternally whatever it is defined to be. If there is ~~xx~~ change, there has to be a concrete unity of concrete data extending over some interval of time, there ~~xxx~~ has to be some difference between the data at the beginning and at the end of the interval, and this difference can be only partial for other_wise there would occur not a change but an annihilation and new creation.

As the ~~xxxx~~ notion of the thing is necessary for the notion of change, so also is it necessary for the continuity of scientific thought and development. For scientific development involves a succession of explanatory systems. Each of such systems serves to define implicitly a set of conjugate terms that through a series of correlations of correlations can be linked with concrete data. Still this succession of systems with their implications does not suffice to constitute scientific thought. For the systems have to be discovered in data and verified in data; they cannot be discovered and verified in any data whatever; neither can they be discovered and verified in the data which they themselves select, for then a number of incompatible systems would be equally verifiable for each would ~~xx~~ satisfy equally well ~~x~~ the data it selected. ~~Thxs~~ Accordingly, scientific thought needs, not only explanatory systems, but also descriptions that determine the data which explanations must satisfy. Moreover, scientific thought needs the notion of the thing which has as its properties both experiential and explanatory conjugates, which remains identical whether it is described or explained, which by its identity demands a ~~xxxxxxxxxxxx~~ coherent explanation or set of explanations that is verifiable in the easily

ascertainable data of the thing as described.

Thus, the thing is the basic synthetic construct of scientific thought and development. It embraces in a concrete unity a totality of spatially and temporally distinct data. It possesses as its qualities and properties the experiential conjugates that can be determined by observation. It is subject to change and variation inasmuch as its data at one time differ from its data at another. ~~xhax~~ Through observations of qualities things are classified by their sensible similarities. Through measurements of changes there are reached classical laws and statistical frequencies. Such laws and frequencies are subject to revision, and the revision is effected by showing that the earlier view does not satisfy completely ~~the data~~ the data on the thing as described. Finally, not only experiential conjugates, explanatory conjugates, and probabilities of events are verifiable; the construct of the thing is itself verifiable; for the ancient list of four elements, earth, water, fire, and air, has been rejected and the new list of the periodic table has been established on the scientific ground of hypothesis and verification: both the old list and the new are lists of kinds of things.

~~Further, things are said to exist. Earlier we defined the event or occurrence by saying that it stood to the conjugate, as the "Yes" of judgment stands to the concept or definition. In like manner, existence stands to the thing, as the "Yes" of judgment to the concept or definition~~

Further, things are said to exist. Earlier we distinguished between questions that admit the simple answers, "Yes" and "No," and questions that do not. It is meaningless to answer either "Yes" or "No" to the question, What is a thing? On the other hand, that answer is quite

appropriate when one asks whether there are any things. Now existence may be defined as what is known inasmuch as an affirmative answer is given to the question, Are there things? Accordingly, existence stands to the thing, as event or occurrence stands to the conjugate. For the existence of the thing is known by verifying the notion of the thing, as the occurrence is known by verifying the conjugate. Moreover, general knowledge of things like knowledge of conjugates is reached by classical procedures; but general knowledge of existence like knowledge of occurrence is through statistical laws. Thus, the definitions of chemical elements and compounds are of the classical type; but predictions of successful analysis or synthesis in nature or in the laboratory have to be based on probabilities.

May we note, once for all, that we shall employ the terms, "exist," "existence," in the foregoing sense. When occasion arises to discuss existentialist philosophy, confusion will be avoided by using the German name, "Existenz," to denote the notion peculiar to that view.

Again, all existing things are particular, but we may think of them in general, and then we abstract from their particularity. One reaches the notion of the thing by grasping a unity in individual data; but once the notion is reached, one can think and speak both of things in general and of things of determinate kinds specified by their conjugates or properties. Moreover, from such general considerations, one can revert to the particular, and that reversal may occur in any of three manners. The simplest case arises when one reverts to a particular thing whose data here and now are given; then by a simple shift of attention one moves from "thing" or "things" to "this thing" or "these things."

The second case occurs when the particular thing, ~~xxthingx~~ to which one reverts, does not lie in the field of observation; then a spatio-temporal frame of reference has to be invoked to provide the link between the data, given here and now, and the data relevant to the particular thing in question; through the ~~mediation~~ of use of such a frame of reference, one comes to think and speak of "that thing" or "those things." The third case arises within the confines of fully explanatory science, which deals with things, not as related to our senses, but as related to one another. Clearly, there are data on things only inasmuch as they are related to our senses; it ~~follows that things themselves or things as explained~~ follows that there can be no appeal to data as long as one considers things themselves, things as explained, things as related to one another, things as equivalent for all observers inasmuch as one prescinds from all observers. None the less, we think and speak of things themselves as existing; and only particulars exist. What, then, is the ground of the individuality of the thing itself? The Aristotelian solution to this problem would be to posit a prime matter that stands to the intelligible unity or form of the thing, as data stand to insight; just as data as given are prior to all insight and so prior to all distinction and relation or unification, so ~~prime~~ prime matter is conceived as a constituent of reality that is presupposed by form and so, of itself, is not a thing nor a quantity nor a quality nor a relation nor a place nor a time nor any other positively conceivable object.

As yet, however, we cannot attempt to say what possible meaning could be assigned the phrase, "constituent of reality." But it is worth noting that the problem of the

individuality of things themselves is neither unique nor isolated. As has been seen, when there is no possibility of observation, there is no possibility of a verifiable image; for the imagined as imagined can be verified only when what is imagined also can be sensed. Accordingly, there are no verifiable images for sub-atomic elements. But if sub-atomic elements cannot be imagined, then atoms cannot be imagined, for one cannot imagine a whole as made up of non-imaginable parts.] [It follows that no thing itself, no thing as explained, can be imagined. If atoms cannot be imagined, then by parity of reasoning molecules cannot be imagined. If molecules cannot be imagined, then neither can cells. If cells cannot be imagined, then neither can plants. Once one enters upon the way of explanation by relating things to one another, one has stepped out of the path that yields representative valid images. No doubt, I can imagine the plant as seen, as related to my senses, as described. But if I apply the full principle of equivalence and prescind from all observers, then I also prescind from all observables. As the electron, so also the tree, in so far as it is considered as a thing itself, stands within a pattern of intelligible relations and offers no foot-hold for imagination. The difference between the tree and the electron is simply that the tree, besides being explained, also can be observed and described, while the electron, though it can be explained, cannot be directly observed and can be described adequately only in terms of observables that involve other things as well. For the present, however, we must be content to note that the thing itself sets problems which, as yet, we are not prepared to tackle.

2. Bodies.

The name, thing, has been employed in a very precise meaning. It denotes a unity, identity, whole; initially it is grasped in data as individual; inasmuch as it unifies spatially and temporally distinct data, it is extended and permanent; inasmuch as the data it unifies also are understood through laws, conjugates become its properties and probabilities govern its changes; finally, things exist and only particulars exist, though the particularity and, indeed, the reality of things themselves give rise to disconcerting problems.

Now there may be men that employ the name, body, in exactly the same meaning as we have assigned to the name, thing. But men are not pure intelligences. They are animals; they live largely under the influence of their inner-subjectivity; they are guided by a common sense that does not bother to ask nice questions on the meaning of familiar names. Accordingly, it would not be rash to suspect that their usage of the name, thing, does not quite coincide with the account we have given; and it is to follow up this suspicion that in the present section we turn our attention to the notion of a body or, rather, of a "body," where the quotation marks denote ~~the interference of some non-intelligent and non-rational factor~~ some divergence from the notion to be reached by intelligence and reasonableness.

To begin from a clear-cut instance, in which there is no need to suppose either intelligence or reasonableness, let us consider a kitten. It is awake and its stream of consciousness flows in the biological pattern. Such consciousness is a higher technique for attaining biological ends. It may be described as orientated toward such ends and as anticipating

means to the ends. Moreover, the means lie in external situations, and so the anticipation is extroverted. The kitten's consciousness is directed outwards towards possible opportunities to satisfy appetites. This extroversion is spatial: as it is by moving the spatial manoeuvres of its head and limbs that the kitten deals with means to its end, so the means also must be spatial, for otherwise spatial manoeuvres would be inept and useless. The extroversion is also temporal: present data are distinct from the memories that enrich them; they are no less distinct from the imagined courses of future action to which they lead. Finally, the extroversion is concerned with the "real": a realistic painting of a saucer of milk might attract a kitten's attention, make it investigate, sniff, perhaps try to lap; but it could not lead to lapping and, still less, to feeling replete; for the kitten, painted milk is not real.

Let us now characterize a "body" as an "already out there now real." "Already" refers to the orientation and dynamic anticipation of biological consciousness; such consciousness does not create but finds its environment; it finds it as already constituted, already offering opportunities, already issuing challenges. "Out" refers to the extroversion of a consciousness that is aware, not of its own ground, but of objects distinct from itself. "There" and "now" indicate the spatial and temporal determinations of extroverted consciousness. "Real," finally, is a sub-division within the field of the "already out there now": part of that is mere appearance; but part is real; and its reality consists in its relevance to biological success or failure, pleasure or pain.

As the reader will have surmised, the terms, "body," "already," "out," "there," "now," "real," stand for concepts uttered by an intelligence that is grasping, not intelligent procedure, but a merely biological and non-intelligent response to stimulus. In other words, the point to the preceding paragraphs is not to suggest that a kitten can understand and describe its spontaneity but, on the contrary, to indicate through human concepts the elements in a non-conceptual "knowing."

Again, as the reader once more will have surmised, our interest in kittens is rather limited. For the point we wish to make is that not a few men mean by "thing" or "body", not so much an intelligible unity grasped in data as individual, but rather an "already out there now real" which is as accessible to human animals as to kittens. When Galileo pronounced secondary qualities to be merely subjective, he meant that they were not "already out there now real." When the decadent Aristotelians and, generally, people that rely on good sound common sense, insist that secondary qualities obviously are objective, they mean that they are "already out there now real." When Descartes maintained that material substance must be identical with spatial extension, his material substance was the "already out there now real." When Kant argued that primary and secondary qualities are merely phenomenal, he meant that for him the reality of the "already out there now real" was mere appearance. Our own position, as contained in the canon of parsimony, was that the real is the verified; it is what is to be known by the knowing constituted by experience and inquiry, insight and hypothesis, reflection and verification. Our present point is that, besides knowing in that rather complex

sense, there is also "knowing" in the elementary sense in which kittens know the "reality" of milk.

It is not difficult to set forth the differences between the two types of knowing. The elementary type is constituted completely on the level of experience: neither questions for intelligence nor questions for reflection have any part in its genesis; and as questions do not give rise to it, neither can they undo it; essentially, it is unquestionable. On the other hand, in fully human knowing experience supplies no more than materials for questions; questions are essential to its genesis: through questions for intelligence it moves to accumulations of related insights which are expressed or formulated in ~~da~~ concepts, suppositions, definitions, postulates, hypotheses, theories; through questions for reflection it attains a further component which hitherto has been referred to as verification and presently will have to be examined more closely in a series of ~~chapters~~m on judgment, its suppositions, and its implications.

~~The two types of knowing both occur in man.~~ They are linked yet opposed. They are modified by their own development. In brief, they ground a dialectic whose advances and reversals, twists and turns, are conspicuous in the whole history of philosophy but, particularly, in modern philosophy.

Both types of knowing have their validity. Elementary knowing possesses

~~Both types of knowing possess their validity. It is not a matter of~~

Both types of knowing possess their validity. One cannot claim that one is concerned with mere appearance while the other is concerned with reality. For elementary knowing vindicates its validity by the survival, not to mention

the evolution, of animal species. On the other hand, any attempt to dispute the validity of fully human knowing involves the use of that knowing and so, if the attempt is not to be frustrated by its own assumptions, it must presuppose that validity.

The problem set by the two types of knowing is, then, not a problem of elimination but a problem of critical distinction. For the difficulty lies, not in either type of knowing by itself, but in the confusion that arises when one shifts unconsciously from one type to the other. Animals have no epistemological problems. Neither do scientists as long as they stick to their task of observing, forming hypotheses, and verifying. The perennial source of nonsense is that, after the scientist has verified his hypothesis, he is likely to go a little further and tell the layman what, approximately, scientific reality looks like! Already, we have attacked the unverifiable image; but now we can see the origin of the strange urge to foist upon mankind unverifiable images. For both the scientist and the layman, besides being intelligent and reasonable, also are animals. To them as animals, a verified hypothesis is just a jumble of words or symbols. What they want is an elementary knowing of the 'really real,' if not through sense, at least by imagination.

As is apparent, we are back at the notion of dialectic. There are two types of knowing. Each is modified by its own development. They are opposed, for one is through intelligent and reasonable questions and answers, and the other is not. They are linked together in man who, at once, is an animal, intelligent, and reasonable. Unless they are distinguished sharply by a critical theory of knowledge, they become confused to generate aberrations that afflict not only scientific thought

but far more conspicuously the thought of philosophers. Further development of this point must be left to the chapter on the Dialectic of Objectivity but, perhaps, enough has been said to justify the following conclusions.

1. By a thing is meant an intelligible, concrete unity. As differentiated by experiential conjugates and common sense expectations, it is a thing for us, a thing as described. As differentiated by explanatory conjugates and scientifically determined probabilities, it is a thing itself, a thing as explained.

2. The notion of thing satisfies the canon of parsimony. For it adds to data only what is grasped by intelligence and reasonably affirmed. Indeed, not only does it satisfy the canon of parsimony but it seems necessary to scientific thought, both because it is presupposed by the necessary notion of change, and because the scientist has to possess a construct that combines both descriptive and explanatory knowledge.

3. By a "body" is meant primarily a focal point of extroverted biological anticipation and attention. It is an "already out there now real," where these terms have their meaning fixed solely by elements within experience and so without any use of intelligent and reasonable questions and answers.

4. By a "body" is meant secondarily any confusion or mixture of elements taken both from the notion of a thing and from the notion of a "body" in its primary meaning.

5. As Newton and Kant, so we also speak of things themselves. But for us the thing itself has the meaning defined above. For Newton it seems to have been a "body." For Kant it also seems to have been a "body" though with the difference that it was inaccessible to scientific knowledge.

6. Ernst Cassirer's work, Substance and Function, contains a polemic against the notion of the thing. I would say that his strictures are valid against the notion of "body" but would claim his argument to be inefficacious against the notion of thing. It is true that the development of explanatory science tends to eliminate the notion of "body"; on the other hand, if explanatory science were to eliminate the notion of tning, it would cut its communications with the data in which it has to be discovered and verified.

3. Genus as Explanatory.

Mechanist determinism is bound to conceive all things as of a single kind. For mechanism posits things as instances of the "already out there now real." Determinism makes every event completely determined by laws of the classical type. And the combination of the two views leaves no room for a succession of ever higher systems: for mechanism would require the higher component to be a "body," and determinism would exclude the possibility of the higher component modifying lower activities.

On the other hand, the notion of the thing as an intelligible, concrete unity differentiated by experiential and explanatory conjugates, clearly implies the possibility of different kinds of things. Moreover, since explanatory conjugates are defined by their relations to one another, there is the possibility of distinct sets of such conjugates. There follows the notion of the explanatory genus. Consider a genus of things, T_i, with explanatory conjugates, C_i, and a second genus of things, T_j, with explanatory conjugates, C_i and C_j, such that all

conjugates of the type, C_i, are defined by their relations to one another and, similarly, all conjugates of the type, C_j, are defined by their relations to one another. Then, since C_i and C_j differ, there will be two different systems of terms and relations; as the basic terms and relations differ, all logically derived terms and relations will differ, so that by logical operations alone there is no transition from one system to the other.

Now it seems that such explanatory genera exist. The laws of physics hold for sub-atomic elements; the laws of physics and chemistry hold for chemical elements and compounds; the laws of physics, chemistry, and biology hold for plants; the laws of physics, chemistry, biology, and sensitive psychology hold for animals; the laws of physics, chemistry, biology, sensitive psychology, and rational psychology hold for men. As one moves from one genus to the next, there is added a new set of laws which defines its own basic terms by its own empirically established correlations. When one turns from physics and chemistry to astronomy, one employs the same basic terms and correlations: but when one turns from physics and chemistry to biology, one is confronted with an entirely new set of basic concepts and laws.

No doubt, a mechanist would have to claim that biology does not differ essentially from astronomy. He would argue that biology instroduces its special terms and laws merely as a matter of convenience, that biology deals not with a new genus of things but with extremely complex macroscopic products of the same old things. Already we have stated the case against mechanism and determinism, and so we have only to indicate how the possibility of new genera arises.

Consider, then, a genus of things, T_i, with explanatory conjugates, C_i, and a consequent list of possible schemes of recurrence, S_i. Suppose there occurs an aggregate of events, E_{ij}, that is merely coincidental when considered in the light of the laws of the things, T_i, and of all their possible schemes of recurrence, S_i. Then, if the aggregate of events, E_{ij}, occurs regularly, it is necessary to advance to the higher viewpoint of some genus of things, T_j, with conjugates, C_i and C_j, and with schemes of recurrence, S_j. The lower viewpoint is insufficient for it has to regard as merely coincidental what in fact is regular. The higher viewpoint is justified, for the conjugates, C_j, and the schemes, S_j, constitute a higher system that makes regular what otherwise would be merely coincidental.

Accordingly, if the laws of sub-atomic elements have to regard the regular behavior of atoms as mere patterns of happy coincidences, then there is an autonomous science of chemistry. If the laws of chemistry have to regard the metabolism and division of cells as mere patterns of happy coincidences, then there is an autonomous science of biology. If the laws of biology have to regard the behavior of animals as mere patterns of happy coincidences, then there is an autonomous science of sensitive psychology. If the laws of sensitive psychology have to regard the operations of mathematicians and scientists as mere patterns of happy coincidences, then there is an autonomous science of rational psychology. Nor does the introduction of the higher autonomous science interfere with the autonomy of the lower; for the higher enters into the field of the lower only in so far as it makes systematic on the lower level what otherwise would be merely coincidental.

As has been remarked, the succession of sciences, corresponding to the succession of higher genera, does not admit any purely logical transition. Each of these main departments has its own basic terms defined implicitly by its own empirically established correlations. Still, this negation of a logical transition must not be interpreted as a negation of any transition whatever. For logical operations are confined to the field of concepts and definitions, hypotheses and theories, affirmations and negations. This field is only part of the larger domain that includes as well sensitive presentations and imaginative representations, inquiry and insight, reflection and critical understanding. Within this larger domain, the successive departments of science are related, for the laws of the lower order yield images in which insight grasps clues to laws of the higher order. In this fashion, the Bohr model of the atom is an image/based on sub-atomic physics yet leads to insights into the nature of atoms. Again, the chemistry of the cell can yield an image of catalytic process in which insight can grasp biological laws. Again, an image of the eye, optic nerve, and cerebrum can lead to insights that grasp properties of the psychic event, seeing, and so the oculist can make one see better and, more generally, the surgeon can make one feel better. Finally, it is with respect to sensed and imagined objects that the higher level of inquiry, insight, reflection, and judgment function.

This linking of the main departments of science runs parallel to the notion of successive higher viewpoints outlined in our first chapter. Just as elementary arithmetic and elementary algebra are distinct systems with different rules yielding different operations and different operations yielding different numbers, so the main departments of science

are distinct systems without logical transitions from one to the other. Just as the image of "doing arithmetic" leads to the insights that ground algebra, so images based on the lower science lead to insights that ground elements of the higher science. Finally, it is because new insights intervene that the higher science is essentially different from the lower.

Naturally, the reader will be inclined to view these images as pictures of reality. In this fashion intelligence is reduced to a pattern of sensations; sensation is reduced to a neural pattern: neural patterns are reduced to chemical processes; and chemical processes to sub-atomic movements. The force of this reductionism, however, is proportionate to the tendency to conceive the real as a sub-division of the "already out there now." When that tendency is rejected, reductionism vanishes. The real becomes the verified, and one can argue in the opposite direction that, since there is no verifiable image of the sub-atomic, there can be no verifiable image of objects composed of sub-atomic elements. The verifiably imagined is restricted to the sensibly given. One has to be content with reasonable affirmations of intelligently conceived terms and relations. On that showing, the function of the transition images is simply heuristic; such images represent, perhaps only symbolically, the coincidental manifold that becomes systematic when subsumed within the higher genus.

To conclude, let us remark that we have been concerned merely to reveal the possibility of genera of things and their compatibility with the sciences as they exist. A much longer investigation would be needed to prove that, in fact, there are such genera. We are convinced that the longer inquiry can be omitted safely enough, for the contention that things are all of one kind has rested, not on concrete evidence, but on// /mechanist assumption.

4. Things within Things.

Once things are recognized to be of different kinds, there arises the obvious question whether there are things within things. Are electrons things within atoms, atoms things within compounds, compounds things within cells, cells things within animals, animals things within men?

The difficulty against an affirmative answer is that the thing is an intelligible unity grasped in some totality of data. It follows that if any datum pertains to a thing, every aspect of the datum pertains to that thing. Hence, no datum can pertain to two or more things, for if in all its aspects it pertains to one thing, there is no respect in which it can xxx pertain to any other.

The difficulty against a negative answer is the laws of the lower science can be verified in things pertaining to a higher genus. If the laws of the electron are observed in the atom, it would seem that electrons exist, not only in a free state, but also within atoms. If the laws of the chemical compound are observed within the living cell, it would seem that chemical compounds exist, not only xix in their free state, but also within cells.

Strangely, it is the argument against a negative answer that has the weak point. The fact that the laws of the lower order are verified in the higher genus proves that the conjugates of the lower order exist in things of the higher genus. But it one thing to prove that conjugates of the lower order survive within the higher genus; it is quite another to prove that things defined solely by the lower conjugates ~~also survive within the higher genus. The argument for the possibility of the higher genus was that there occurred~~

also survive. To arrive at conjugates, abstractive procedures are normal; one considers events under some aspects and disregards other aspects of the same events. But to arrive at a thing, one must consider all data within a totality and one must take into account all their aspects. It follows that one cannot consider the aggregate of events, E_{ij}, in so far as they satisfy the laws of the lower order, and then conclude to the existence of things of the lower order. For this would be to abstract from the aspect of the aggregate that cannot be accounted for on the lower viewpoint and that justifies the introduction of the higher viewpoint and the higher genus. Accordingly, if there is evidence for the existence of the higher genus, there cannot be evidence for things of lower genera in the same data.

Naturally enough, the reader will be inclined to ask what happens to the things of the lower order. But, perhaps, a moment's reflection will recall that there is quite a difference between things and "bodies." If the objects of the lower order were "bodies," then it would be mere mystification to claim that they dom not exist within higher genera. Our claim does not regard alleged "bodies." It is the simple statement of fact that in an object of a higher order, there is an intelligible, concrete unity differentiated by conjugates of both the lower and the higher order, but there is no further, intelligible, concrete unity to be discerned in the same datam and to be differentiated solely by conjugates of some lower order. In other words, just as the real is what is to be known by verified hypothesis, so also change is what is to be known through correct, successive, and opposed affirmations.

5. The Things and Emergent Probability.

Our account of the objective implications of the use of both classical and statistical procedures was cast in the form of a world-view. There now arises the question, previously omitted, whether there is an emergent probability of things as well as of schemes of recurrence. Our answer will consist in a discussion of the suppositions or postulates of an affirmative answer.

A first, logical postulate will be that, if there exist conjugates C_j, of a higher order, then there will exist things, T_j, of the same higher order. This postulate is named logical because it follows necessarily from our account of the notion of a thing. For the evidence for the conjugates, C_j, will be found in concrete data; in the same data there will be evidence for some thing that is to be differentiated by the conjugates verified in the same data; hence there cannot be conjugates of a higher order without things of the same order.

A second, probability postulate will be that, if there exist things, T_i, differentiated by conjugates, C_i, and functioning in schemes, S_i, then there exists the possibility and, as well, there will be some probability of a non-systematic occurrence of the aggregate of events, E_{ij}, that would occur regularly only if things of a higher order existed. There exists this possibility, for none of the events in the aggregate exceeds the capacity of the things, T_i. There exists some probability ~~for a random occurrence of all the events in the aggregate~~ for any one of for an isolated occurrence of each of the events in the aggregate, for each is concretely possible. From the theory of probability it follows necessarily that there will be some probability for a non-systematic occurrence of the combination

of all of the events in the aggregate.

A third, evolutionary postulate will be that, if non-systematically there occurs suitable aggregates of events, E_{ij}, then there will emerge conjugates, C_j, of a higher order to make the recurrence of the aggregates systematic. By the first, logical postulate, there will follow the existence of things, T_j, of the higher order. By emergent probability there will arises schemes of recurrence, S_j, that depend upon the classical laws that define the new conjugates, C_j.

It must be noted that this evolutionary postulate is to be understood within the limits of possible empirical science. It states what happens on the fulfilment of determinate conditions. It is relevant to an understanding of the generic, immanent intelligibility of the order of this universe. It is relevant only to an account of such immanent intelligibility; as empirical science, it prescinds from efficient, instrumental, and final causes, which refer to distinct types of intelligibility and lie beyond the qualifications of an empirical method either to affirm or to deny.

~~Further, it may be observed that the evolutionary postulate is a generalization of the old axiom, Materiae dispositae advenit formam. Now that axiom rests on certain obvious facts of transformation, generation, and nutrition. Hence, the generalization cannot be rejected outright, for in these an outright rejection of the generalization would conflict with known and accepted fact.~~

Further, it may be observed that the evolutionary postulate, as stated, is equivalent to the old axiom, Materiae dispositae advenit formam. In the postulate and in the old axiom there are involved exactly the same components, namely, a lower

order of things, the occurrence of a suitable disposition in the lower order, and the emergence of a component that pertains to a higher order. It follows that the evidence for the axiom, which consists in certain obvious facts of transformation, generation, and nutrition, is also evidence for the postulate. Finally, while there are differences between the context of the axiom and the context of the postulate, these differences do not appear to be significant. For the context of the axiom involves efficient and final causes to which we can attend in due course, and the context of the postulate involves probabilities whose scientific import was not grasped until recently.

The fourth, sequential postulate would effect the extension of emergent probability to things. It affirms the possibility of a conditioned series of both things and schemes of recurrence realized cumulatively in accord with successive schedules of probabilities. Thus, the sequential postulate presupposes the other three; it adds an affirmation of the possibility of applying the other three postulates over and over so that one could begin from the simplest things and proceed to the most complex. On the other hand, the sequential postulate affirms no more than a possibility. It does not claim that human science has reached the stage of complete and definitive knowledge that would be necessary to state fully the total sequence of emerging things and schemes. Accordingly, the sequential postulate is methodological; it is not some hypothesis of empirical science but rather an assumption that can generate an almost endless stream of hypotheses; it is not a scientific theory that can be verified or refuted, for it is far too general to be tested in that fashion;

it is an approach, a heuristic assumption, that can be worked out in an enormous number of different manners and that can be tested empirically only through such specific determinations and applications.

It follows that the validity of the sequential postulate rests simply on the validity of inquiring intelligence. Just as we endeavor to understand smaller aggregates of data, so also we seek the intelligibility immanent in the universe of data. Just as the rejection of all inquiry is a total obscurantism, so the rejection of this or that inquiry is a partial obscurantism. For all data are given equally data; all are materials for understanding; and as it is impossible to exclude all understanding, so it is incoherent to attempt insight in some cases and to refuse to attempt it in others that do not significantly differ. Now if there is anything to be known an intelligibility immanent in the universe of data, then it will regard things no less than events and schemes of recurrence; for things are to be grasped in data; their numbers and differentiation, their distribution and concentrations, their emergence and survival, give rise to questions that require an answer. One does not escape that requirement by appealing to divine wisdom and divine providence, for that appeal reinforces the rejection of obscurantism and provides another argument for affirming an intelligible order immanent in the visible universe. Nor can a satisfactory answer be given by the necessity of determinists, for statistical residues are a fact, or by the chance of indeterminists, for chance is a residual defect of intelligibility, or by the eternally recurrent cycles of the Aristotelians, for these cycles are based on a mistaken over-estimate of the influence

of the celestial spheres. In a word, the sequential postulate seems to stand without a serious competitor in the field.

Four postulates have been outlined. Together they effect the extension of emergent probability, so that it regards the differentiation, ~~emergence~~, numbers, distribution, development, survival, and disintegration of things as well as of schemes of recurrence. Moreover, the extended affirmation, no less than the original, is generic and methodological. ~~It is not any particular theory to be established or refuted by It serves to define a direction for investigation. It does not involve any commitment to any of the particular theories or hypotheses that, up to the present time, have been propounded by such investigation as a result of such investigation.~~ It rests on the principle that data are to be understood, that understanding grasps concrete unities, systematic relations, and non-systematic probabilities of existence and occurrence. It affirms that inquiry moves in a determinate direction and that this direction implies an emergent probability of things and schemes. At that point it stops, for it leaves to those competent in specialized departments the task of working out precise statements on the unfolding of generalized emergent probability.

6. Species as Explanatory.

As there are classifications based on the relations of things to our senses, so also there are classifications based on the relations of things to one another. The latter classifications are explanatory, and they imply not only explanatory genera but also explanatory species.

The key notion in the explanatory species is that any lower species of things, T_i, with their conjugates, C_i, and their schemes, S_i, admit a series of coincidental aggregates of events, say E_{ijm}, E_{ijn}, E_{ijo},..., which stand in correspondence with a series of conjugates, C_{jm}, C_{jn}, C_{jo},..., of a higher genus of things, T_j.

For example, let T_i stand for the sub-atomic elements, C_i for the terms implicitly defined by the laws governing such elements, S_i for all the combinations of laws that yield schemes of recurrence for sub-atomic events. Then, the terms of the series, E_{ijx}, stand for a sequence of aggregates of sub-atomic events, where each aggregate is merely coincidental from the viewpoint of sub-atomic laws and schemes. Such coincidental aggregates can be represented by symbolic images, and in such images there are clues leading to insights that pertain to the higher viewpoint of chemistry. Such insights form two levels. A first level yields the series of relations constitutive of the periodic table; these relations define implicitly the conjugates, C_{jx}; such conjugates both differentiate the chemical elements, which are the things, T_j, and stand as the higher system that makes systematic the coincidental aggregates, E_{ijx}. A second level yields the multitudinous series of chemical compounds, where combinations of aggregates, E_{ijx}, yields new

and larger aggregates, E_{ijy}, that become systematic under the conjugates, C_{jy}.

Again, let T_i now stand for the chemical elements and compounds, C_i for the conjugates implicitly defined by their laws, S_i for the schemes of recurrence that can be ~~expressed~~ explained by chemical laws. Let the terms of the series, E_{ijx}, stand for aggregates of chemical processes, where each aggregate is merely coincidental from the chemical viewpoint. Such coincidental manifolds can be imagined symbolically, and in them there will be clues leading to insights that pertain to the higher viewpoint of biology. Again, the insights occur on two levels. Aggregates, E_{ijx}, vary with different kinds of cell; aggregates of aggregates, say E_{ijy}, vary with different kinds of multicellular living things. ~~The higher terms of things, T_j, are the series of contains the biological~~ The things, T_j, are the series of biological species. They are higher systems that make systematic the coincidental aggregates, E_{ijx}, E_{ijy}. The terms ~~of~~ defined by the relations of the higher systems are the conjugates, C_{jx}, C_{jy}, which vary with variations in the type of the aggregates of processes, E_{ijx}, E_{ijy}.

Though the same formal structure yields both the chemical and the biological species, the greater complexity of the latter necessitates their markedly dynamic characteristics. An inspection of the periodic table reveals some elements to be extremely ~~inert~~ inert, others to be highly unstable, some to possess fewer and others more numerous capacities for ~~combination. Now a basic condition of biological aggregates of chemical processes is that the processes avoid both the death of inertia and the disruption of explosive change.~~

combination. It follows that chemical elements and compounds will not be all equally suitable for the aggregates of processes to be systematized biologically. Moreover, in a universe in which concrete events are never more than probable, the higher biological system will have the function not merely of systematizing what otherwise would be coincidental but also of extruding what has become inept and ~~intussuscept~~ intussuscerting fresh materials. Again, the fulfilment of the twofold function will be only probable, and so there follows a third function of reproduction, of starting up a new instance of the system in fresh materials. Again, the system can shift its ground, instead of maintaining and reproducing a ~~in~~ single cell, it can maintain and reproduce an ordered manifold of cells; and this shift involves a new dimension of growth and differentiation in the functions of the system. Thus, the biological species are a series of solutions to the problem of systematizing coincidental aggregates of chemical processes. Minor changes in the underlying aggregates yield variations ~~i~~ within the species; major changes that are successfully surmounted yield new types of solution and so new species. The existence of a series of such major changes is the biological content of the sequential postulate of generalized emergent probability.

~~A third application of the key notion in explaining species relates higher conjugates, C_{jm}, C_{jn}, C_{jo}, ..., which define psychic events, to otherwise coincidental aggregates of neural events, E_{ijm}, E_{ijn}, E_{ijo}, ... This relationship has been xxxx outlined already in discussing the biological pattern of experience and in connecting it with neural demand functions.~~

The third application of the key notion takes the biological organism as its lower level and animal sensitivity as its higher system. Already something has been said of the biological pattern of experience and of its correspondence with underlying neural demand functions. The higher conjugates, C_{jx}, now are defined implicitly by the laws of psychic stimulus and psychic response, and these conjugates make systematic otherwise merely coincidental aggregates of neural events, E_{ijx}. However, these neural events occur within an already constituted nervous system which, in great part, would have no function if the higher psychic system did not exist to inform it. In this fashion we are confronted with a basic fact which a mechanistic viewpoint has tended to overlook and to obscure, namely, that immanent intelligibility or constitutive design increases in significance as one mounts from higher to still higher systems. The periodic table of chemical elements is dominated by atomic numbers and atomic weights that are explained by underlying sub-atomic entities. A first degree of freedom appears in the vast diversity of chemical compounds in which patterned aggregates of aggregates render sub-atomic limitations indirect. A second degree of freedom appears in the multicellular plant: each cell is an aggregate of aggregates of aggregates; and the plant not only is an aggregate of cells but also it is the aggregate determined by its own laws of development and growth. A third degree of freedom appears in the animal, in which the second degree is exploited to provide the materials for the higher system of biological consciousness. In other words, because the multicellular structure is an immanently controlled aggregate of aggregates of aggregates of aggregates, there is the possibility of an organic nervous system that stands in

correspondence with a still higher psychic system. Hence, while the chemical elements appear as dominated by the manifolds that they systematize, a multicellular structure is dominated by an idea that unfolds in the process of growth, and this idea can itself be subordinated to the higher idea of conscious stimulus and conscious response. While chemical compounds and unicellular entities systematize aggregates that, at least initially, are put together non-systematically, multicellular formations systematize aggregates that they themselves assemble in systematic fashion. There follows an enormous shift of emphasis and significance from the materials to be systematized to the conditioned series of things and schemes that represents possibilities of systematizing. No doubt, plants and animals cannot emerge without the initial aggregation of chemicals in their initial cell or without an environment in which there are the possible and probable schemes of recurrence in which they function. Yet the fulfilment of these necessary conditions seems to differ enormously from the developed plant or animal; and none the less that further development has its basis, not in additional outer conditions or events, but in the realm of intelligible possibility.

Accordingly, emergent probability has quite different implications from the gradual accumulation of small variations that is associated with the name of Darwin. The fundamental element in emergent probability is the conditioned series of things and schemes; that series is realized cumulatively in accord with successive schedules of probabilities; but a species is not conceived as an accumulated aggregate of theoretically observable variations; on the contrary, it is

an intelligible solution to a problem of living in a given environment, where the living is a higher systematization of a controlled aggregation of aggregates of aggregates of more and more aggregates, and the environment tends to be constituted by other living things. This notion of the intelligibility of species differs greatly from Plato's eternal Forms or even from Aristotle's alleged transference of Forms from their noetic heaven into things. Still, it does not take the notion of species out of the realm of the intelligible and place it in some aggregation of sensible qualities. Though later species are solutions to concrete problems in concrete circumstances, though they are solutions that take into account and, as it were, rise upon previous solutions, still a solution is the sort of thing that insight hits upon and not the sort that results from accumulated, observable differences.

There is a further point to be made. An explanatory account of animal species will differentiate animals not by their organic but by their psychic differences. No doubt, there are many reasons for considering the study of animals to pertain not to psychology but to biology. In the first place, animal consciousness is not accessible to us. Secondly, an indirect study of an animal's psyche through its behavior is difficult, for what is significant is not any instance of behavior but the range of different modes of behavior relative to another range of significantly different circumstances. Thirdly, an indirect study of the psyche through its neural basis is blocked by the peculiar difficulty of a correspondence that relates, not conjugates defined by a single system of laws, but distinct higher and lower systems of conjugates. Fourthly, it is far easier to

describe organs and functions. Fifthly, such descriptive work may be reconciled more easily with the notion that science deals with "bodies." Still, science deals not with"bodies" but with the intelligible unities of things; it describes, but it does so in order to move on towards explanation; and its business is not to follow some line of least resistance but to triumph in surmounting apparently insoluble difficulties. In brief, the alleged reasons are excuses. Against them stands a fact: the animal pertains to an explanatory genus beyond that of the plant; that explanatory genus turns on sensibility; its specific differences are differences of sensibility; and it is in differences of sensibility that are to be found the basis for differences of organic structure, since that structure, as we have seen, possesses a degree of freedom that is limited but not controlled by underlying materials and outer circumstances.

The fourth application of the key notion brings us to man. As sensitive appetite and perception are a higher system of the organic, so inquiry and insight, reflection and judgment, deliberation and choice are a higher system of sensitive process. The content of images provides the materials of mathematical understanding and thought; the content of sensible data provides the materials of empirical method: the tension between incompletely developed intelligence and imperfectly adapted sensibility grounds the dialectics of individual and social history.

Already we have noted the aesthetic liberation of human experience from the confinement of the biological pattern and the further practical liberation of human living

that is brought about inasmuch as man grasps possible schemes of recurrence and fulfils by his own action the conditions for their realization. Now we must proceed to the root of these liberations. They rest on two facts. On the one hand, inquiry and insight are not so much a higher system as a perennial source of higher systems, so that human living has its basic task in reflecting on systems and judging them, deliberating on their implementation and choosing between possibilities. On the other hand, there can be in man a perennial source of higher systems because the materials of such systematization are not built into his constitution. For an animal to begin a new mode of living, there would be needed not only a new sensibility but also a new organism; An animal species is a solution to the problem of living, so that a new solution would be a new species; for an animal to begin to live in quite a new fashion, there would be required not only a modification of its sensibility but also a modification of the organism that the sensibility systematizes. But in man a new department of mathematics, a new viewpoint in science, a new civilization, a new philosophy has its basis, not in a new sensibility but simply in a new manner of attending to data and of forming combinations of combinations of combinations of data. Seeing and hearing, tasting and smelling, imagining and feeling are events with a corresponding neural basis; but inquiring and understanding have their basis, not in a neural structure, but in a structure of psychic contents. Sensation supposes sense organs; but understanding is not another type of sensation with another sense organ; it operates with respect to the content of sensation and imagination; it represents a still further degree of freedom. A multicellular

formation is an immanently directed aggregation of aggregates of aggregates of aggregates. Sensibility is a higher system of otherwise coincidental events in the immanently directed aggregation. Intelligence is the source of a sequence of systems that unify and relate otherwise coincidental aggregates of sensible contents. Just as the famous experiments on sea urchins reveal the immanent direction of the aggregation of aggregates of aggregates of aggregates, so the constructive and repressive censorship exercised preconsciously by intelligence reveals a still higher immanent direction that controls the sensible and imaginative contents that are to emerge into consciousness.

Man, then, is at once explanatory genus and explanatory species. He is explanatory genus, for he represents a higher system beyond sensibility. But that genus is coincident with species, for it is not just a higher system but a source of higher systems. In man there occurs the transition from the intelligible to the intelligent.

7. Concluding Summary.

Frequently in the course of reading earlier chapters the reader may have wondered, to the point of impatience and annoyance, why we did not begin from the simple and obvious notion of the thing. Now, perhaps, he will grant not only that that notion is neither as simple nor as obvious as it seems but also that things, since they are concrete syntheses both of the object and of the subject, cannot be treated until there are assembled the elements to be synthesized.

The basic difficulty is from the side of the subject. He is involved in a dialectical tension, and he can

be made aware of the fact only after he has grasped what is meant and what is not meant by inquiry, insight, conception as opposed to sensible data and schematic images. Accordingly, our first task was to clarify the nature of insight, and to it we devoted our first five chapters. On that foundation we constructed, first, a pure theory of common sense and, secondly, an account of its dialectical involvement. Only then could we hope to distinguish effectively between things and "bodies," between the intelligible unities to be grasped when one is within the intellectual pattern of experience and, on the other hand, the highly convincing instances of the "already out there now real" that are unquestioned and unquestionable not only for animals but also for the general bias of common sense.

If that distinction has been drawn effectively, still it does not follow that the reader will always find it convincing. For the distinction is a work of intelligence operating in the intellectual pattern of experience. No one can hope to live exclusively in that pattern. As soon as anyone moves from that pattern to the dramatic pattern of his intercourse with others or the practical pattern of his daily tasks, things as intelligible unities once more will take on for him the appearance of unreal speculation while "bodies" or instances of the "already out there now real" will resume the ascendency that they acquired without opposition in his infancy. Accordingly, the attainment of a critical position means not merely that one distinguishes clearly between things and "bodies" but also that one distinguishes between the different patterns of one's own experience and refuses to commit oneself intellectually unless one is operating within the intellectual pattern of experience. Inversely, it

is the failure to reach the full critical position that accounts for the endless variety of philosophic positions so rightly lamented by Kant; and it is by a dialectical analysis, based on the full critical position, that one can hope to set up a philosophy of philosophies in the fully reflective manner that at least imperfectly was initiated by Hegel and still is // demanded by modern needs. But, clearly enough, these points can be developed only after we have answered ~~hhs~~ questions on the nature of rational consciousness, of critical reflection, of judgment, of the notions of being and objectivity.

To revert from ~~h~~ these high matters, which belong to later chapters, we turn from the dialectical involvement of thing as the/subject to the thing as object. Things are concrete, intelligible unities. As such, all are alike. Still they are of different kinds, not merely when described in terms of their relations to us, but still more so when explained in terms of their relations to one another. For there is a succession of higher viewpoints; each is expressed in its own system of correlations and implicitly defined conjugates; and each successive system makes systematic~~m~~ what otherwise would be merely coincidental on the preceding viewpoint. In this fashion one proceeds from the sub-atomic to the chemical, from the chemical to the biological, from the biological to the sensitive, and from the sensitive to the intelligent. Moreover, emergent probability is extended to realize cumulatively, in accord with successive scedules of probabilities, a conditioned series not only of schemes of recurrence but also of things. The conditioned series reveals not only an increasing systematization of events but also an increasing liberation of serial possibilities from limitations and restrictions imposed by previous realizations.

Plants and still more so animals function, not in this or that scheme of recurrence, but in any of ever increasing ranges of schemes. Man invents his own schemes and produces by his labor and his conventions the conditions for their actuality. Again, there is an immanent direction in the aggregation of aggregates in multicellular formations that is exploited by plants and animals; there is a similar immanent direction exercised by the censorship over contents to emerge into consciousness; and so, in the limiting case of man, the intelligible yields to the intelligent, and the higher system is replaced by a perennial source of higher systems.

This view of the thing is opposed by other views. The uncritical mechanist supposes that things are "bodies" and that the unities and systems, grasped by intelligence, are merely subjective contents of merely subjective activities. No doubt, if subjectivity is simply the opposite of "body," then what is grasped by intelligence is merely subjective. But it is not quite so clear that "objectivity" and "body" are convertible terms. The uncritical realist would dispute our account of explanatory genera and species; on his view the empirical scientist understands, not reality but phenomena; beyond the unities and relations, grasped by the scientist, there is a deeper reality, a metaphysical essence, apprehended by philosophic intuition. But what is this philosophic intuition? I have looked for it and failed to find it. I know no reason for affirming its occurrence, and I know no reason for refusing to identify the alleged metaphysical essence with the already, quite precisely defined, notion of "body."

Besides the uncritical mechanists and the uncritical realists, there is a variety of more or less critical positions. Before we tackle them, let us ask ourselves a rather pertinent question. All along we have been concerned with insight, with what it is to understand. But among the more conspicuous properties of understanding is its liability to incompleteness, inadequacy, error. What we have ventured to say about mathematics, empirical science, common sense, things, may be quite coherent and intelligible. Still, that is not enough. Is it correct? Are things so? Have we been offering mere airy speculations?

Our answer is threefold. With regard to what has been put forward, it is quite enough for our purpose that what has been said is coherent and intelligible; for our purpose has been to reveal the nature of insight and to indicate its basic role in human knowledge; the fact that there are other views more coherent and more intelligible as well as moresatisfactory than our own on mathematics and empirical method, on common sense and things, will not change our account of insight but confirm it. Secondly, there has been raised the second type of question, Is it so? Such are the questions, not of intelligent inquiry, but of critical reflection. It is to such questions and to the possibility of answering them that the following chapters are directly. Thirdly, just as an account of insight is an account of method and so an account of what method cannot but yield at the term of inquiry, so also an account of critical reflection and the possibility of judgment will reveal unavoidable judgments. Those unavoidable judgments will be our answer to the question whether we are indulging in airy speculation or not.