

# 1. Axioms of Intuition

① Principle: All intuitions are extensive magnitudes [extensive Größen]

Note: in the A edition, this principle was written as: [A:162]

Grundsatz des reinen Verstandes: Alle Erscheinungen sind ihrer Anschauung nach extensive Größen.

② Principle of pure understanding: All appearances are as regards to their intuition extensive magnitudes

In the Opus [6 (21:455)] Kant wrote:

Theorem: All objects of the senses have extensive magnitude.

( Lehrsatz Alle Gegenstände der Sinne haben extensive Größe. )

At first glance, this seems to be three different principles (one each for appearances, intuitions, and objects). Kant is quite clear that "objects" are to be viewed only as appearances, so this reduces things down to two principles. The A edition and the Opus bracket "intuitions" in the B edition. The question is: is the B edition expanding the principle, limiting it, or did Kant mean the same thing in ~~the~~ "both" cases?

In Kant's own copy of the A edition, he wrote the following note [KANTia: 287 fn<sup>d</sup>]:

"Since we can arrange perceptions only through apprehension in time, but this is a synthesis of the homogeneous (which the concept of magnitude corresponds to in the unity of consciousness), we cannot cognize the objects of outer and inner sense otherwise than as magnitudes in experience. Limitation of the concept of magnitude."

The pure principles of Rational Physics all pertain to the objective validity of experiences (both actual and merely possible); cognition is not merely intuition alone, but intuition and concepts together. "...These principles<sup>②</sup> are nothing than ~~the~~ rules of the objective use of the {categories} [KANTia: 284-285 (B:200)]

↑ "the former" in Kant's actual text: should be {the table of categories}

① ~~Das~~ Das Prinzip

② Grundsatz

③ das mannigfaltigen Geschichtigen: This should be "the manifold homogeneous" w/ "homogeneous" being the objective.

From this metaphysical perspective, I think we must conclude that Kant really means "appearances" to be the subject of this predication and that it is the B edition which is misleading in this case.

So, we have established that the Axioms of Intuition is talking about cognitions of appearances. Now we need to be clear on what "magnitude" means. Kant writes [KANTIA: 207 (B: 203)]:

Now the consciousness of the homogeneous manifold in intuition in general, insofar as through it the representation of an object first becomes possible, is the concept of a magnitude (Quantität).<sup>①</sup>

Note that this does not define "magnitude"; it only says that 'the consciousness of the homogeneous manifold in intuition' is a concept of a magnitude, i.e., "magnitude" is a concept that is more general than this one special case.

We set the definition of "magnitude" from [OPUS: 6 (21: 454)]<sup>7</sup>:<sup>456</sup>

Magnitude is the determination of an object according to which the apprehension of its intuition is represented as possible only through the repeated positing of what is the same...

The above concept of magnitude is not an empirical concept, for it contains the conditions of apprehension in general and the unity of the concept according to its rule, from which alone empirical concepts can arise. Thus it also contains a priori intuition and a concept of the understanding, the synthetic unity of its manifold in apperception.

The concept of magnitude is not a concept derived from experience. It lies a priori in the understanding, although only in experience do we develop it. ... Now the concept of magnitude contains that which the understanding performs for itself, namely, to produce an entire representation through the synthesis of repeated addition.

This description of "magnitude" is made more puzzling by something Kant wrote elsewhere on the same page [OPUS: 6 (21: 455)]: He lists the "categories of magnitude" (Categorien der Größe Quantität) as (1) Unity (mathematical measure), (2) Plurality (counting - a measure of other magnitudes) and (3) Totality (number - aesthetic comprehension, uniting the multitude). Now, what is he trying to say here?

① des mannigfaltigen Gleichartigen: This should be "the manifold homogeneous" w/ "homogeneous" being the object noun.

I do not believe he is equating "magnitude" (Größe) with the momenta of Quantity (der Quantität), because he says that "Quality can have intensive magnitude."

§25  
In [C.5:86], Kant writes

That anything is a magnitude<sup>①</sup> (quantum) may be cognized from the thing itself, without any comparison of it with other things, viz. if there is a multiplicity<sup>②</sup> of the homogeneous constituting one thing. But to cognize how great it is always requires some other magnitude as a measure.<sup>③</sup>

But because the judging of magnitude depends, not merely on multiplicity (number), but also on the magnitude of the unit (the measure)<sup>④</sup>... we see that the determination of the magnitude of phenomena can supply no absolute concept of whatever magnitude, but only a comparative one.

① eine Größe    ② Vielheit    ③ Maße    ④ des Maßes

So, what I think we have is that magnitude is

- 1) a determination
- 2) a determination of a one constituted from a homogeneous many<sup>(?)</sup>

Since it is a "determination" (not a determinable or a determined), it is an outcome so far as the process of representing is concerned.

A collection is merely an aggregate. An aggregate of homogeneous parts which are cognized as constituting one thing is an extensive magnitude:

I call an extensive magnitude that in which the representation of the parts makes possible the representation of the whole (and therefore necessarily precedes the latter).

Metaphysik Vorlesung 28:424-425 contains further info on this, but Ameriks & friend did not see fit to include this in KANT19 - \*5!3!

Kant describes by example how space and time can be represented only by a successive ~~process~~ synthesis step-by-step until the ~~whole~~ "magnitude... is finally generated" [KANT1A:287-288 (B:203-204)] This statement is proof that Kant's "pure intuitions" contain no "pre-determined forms" but that the pure intuitions of space and time are the determined outcomes of a constructive synthesis. (!)

It also settles what he means by "number" in The transcendental schema.  
 "Number" = "multiplicity." I think it is safe to view "multiplicity" as  
 an "unfinished" representation on its way to becoming a magnitude.

\* Now, The next problem is : what does Kant mean by "the homogeneous" ?  
 The concept of magnitude is the "consciousness of the manifold homogeneous"

homogeneous, a. [Gr. homogenēs, of the same race, family, or kind;  
homos, the same, and genos, race, family, kind]

1. (a) of the same character, structure, quality, etc.; essentially like; of the same nature; (b) composed of similar or identical elements or parts; uniform. opposed to heterogeneous
2. in mathematics, (a) of the same kind and therefore capable of being compared in size; (b) having all terms of the same dimension.

manifold, a. [~~man~~ M.E. manifold, manyfold; A.S. manigfeald; manig, many, and -feald, -fold]

1. having many and various forms, features, parts, etc.; as, manifold wisdom.
2. of many sorts; many and varied; multifarious: used with a plural noun; as, manifold duties.
3. being such in many and various ways ~~ways~~, or for many reasons; as, a manifold villain.
4. comprising, consisting of, or operating several units or parts of one kind: said of certain devices

manifold, n. 1. what is manifold.

2. any of many copies made by manifolding

Kant uses "homogeneous" as a noun (Gleichartig) and not as an adjective, so I think he means that when the parts are put together, they become "the homogeneous" whereas in nexus they are connected but are not cognized "as 'one'" thing. (Substance  $\neq$  accident) (cause  $\neq$  effect)

of course, this still leaves a problem w/ C.J:86, i.e., "a multiplicity of the homogeneous constituting one thing"

Let's take a look at CJ again:

;	Wenn	nämlich	Vielheit	des	Gleichartigen	zusammen	Eines	ausmacht.
(conj.)	(adj.)	(f-)			homogeneous	(adv-)		(v.t.)
when	namely,	plurality,				together,		make up;
whenever	that is;	multiplicity				jointly;		add up;
as long as	to wit,					at the same time		constitute,
as soon as	of course							form
								(constitutes)

} ausmachen

Gleichartigkeit (homogeneity) is f-

Einer, m. (Math) unit

ein, m., eine, f., ein, n.

Pluhar [KANT 5a:103 (5:248)] got this right: (almost)

"namely, [whenever] a multiplicity of the homogeneous [at the same time] constitutes a unity.

Pluhar used [if] and [together] instead of my insertions. ('Five ducks' is a 'multiplicity of the homogeneous' but is not a unity; a "flock of five ducks" is a multiplicity of the homogeneous which is also a unity)

There seems to be a real "chicken and egg" problem here. If the "parts" are homogeneous, what determined they were homogeneous in the first place? If they become homogeneous, then the act that collected them together made them homogeneous. This seems to be the way out of this hole.

We can have a multiplicity of the homogeneous thought as plurality (members of the same species), as totality (the species considered as a genus) or as unity — an entity. It comes back to the specific category.

Now, all appearances "are" extensive magnitudes: an appearance <sup>has</sup> a singular representation. It can never be anything but this. A representation can be cognized as a thing only if it is thought as one thing. This is "identification" pure and simple. An intuition "makes" or "is" an axiom — a "synthetic a priori proposition" [KANT 1a:288 (B:204)]. What is "propositioned" is the identification of a "thing" in appearance.

Although time (pure intuition of inner sense) is necessarily involved in the synthesis of an empirical intuition, time is not contained in the intuition (all "things" are "timeless"). This is why motion (change) is necessary for the conceptualization of "objective time."

Note: a "raw" appearance (before its connection to the category of substance) is not yet properly to be called a "thing" (is not yet a phenomenon); rather, it is "accident" — something that can be predicated of a substance. (A Piagetian "picture" or "perceptual cluster")