Of Ideas, Their Generation and Associations

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An English physician and theologian, Hartley (1705-1757) is associated with the doctrine of "associationism," which sought to explain how the ideas that Locke had suggested originate in sensory sensations become associated in a certain necessary order in the brain. This passage is from his 1749 book, Observations on Man.

I took notice in the Introduction, that those Ideas which resemble Sensations were called Ideas of Sensation; and also that they might be called *simple* Ideas, in respect of the intellectual ones which are formed from them, and of whose very Essence it is to be *complex.* But the Ideas of Sensation are not entirely simple, since they must consist of Parts both coexistent and successive, as the generating Sensations themselves do.

Now, that the simple Ideas of Sensation are thus generated, agreeably to the Proposition, appears, because the most vivid of these Ideas are those where the corresponding Sensations are most vigorously impressed, or most frequently renewed; whereas,,if the Sensation be faint, or uncommon, the generated Idea is also faint in proportion, and, in extreme Cases, evanescent and imperceptible. The exact Observance of the Order of Place in visible Ideas, and of the Order of Time in audible ones, may likewise serve to show, that these Ideas are Copies and Off-springs of the Impressions made on the Eye and Ear, in which the same Orders were observed respectively. And though it happens, that Trains of visible and audible Ideas are presented in Sallies of the Fancy, and in Dreams, in which the Order of Time and Place is different from that of any former Impressions, yet the small component Parts of these Trains are Copies of former Impressions; and Reasons may be given for the Varieties of their Compositions.

It is also to be observed, that this Proposition bears a great Resemblance to the Third; and that, by this Resemblance, they somewhat confirm and illustrate one another. According to the Third Proposition, Sensations remain for a short time after the Impression is removed; and these remaining Sensations grow feebler and feebler, till they vanish. They are therefore, in some Part of their Declension, of about the same Strength with Ideas, and, in their first State, are intermediate between Sensations and Ideas. And it seems reasonable to expect, that, if a single Sensation can leave a perceptible Effect, Trace, or Vestige, for a short time, a sufficient Repetition of a Sensation may leave a perceptible Effect of the same kind, but of a more permanent Nature, *i.e.* an Idea, which shall recur

occasionally, at long Distances of Time, from the Impression of the corresponding Sensation, & *vice versa.* As to the Occasions and Causes, which make Ideas recur, they will be considered in the next Proposition but one.

The Method of Reasoning used in the last Paragraph, is farther confirmed by the following Circumstance; viz. That both the diminutive declining Sensations, which remain for a short Space after the Impressions of the Objects cease, and the Ideas, which are the Copies of such Impressions, are far more distinct and vivid, in respect of visible and audible Impressions, than of any others. To which it may be added, that, after Traveling, hearing Music, & c. Trains of vivid Ideas are very apt to recur, which correspond very exactly to the late Impressions, and which are of an intermediate Nature between the remaining Sensations of the Third Proposition, in their greatest Vigor, and the Ideas mentioned in this.

The Sensations of Feeling, Taste, and Smell, can scarce be said to leave Ideas, unless very indistinct and obscure ones. However, as Analogy leads one to suppose, that these Sensations may leave Traces of the same kind, tho' not in the same degree, as those of Sight and Hearing ; so the Readiness with which we reconnoiter Sensations of Feeling, Taste, and Smell, that have been often impressed, is an Evidence, that they do so; and these generated Traces or Dispositions of Mind may be called the Ideas of Feeling, Taste, and Smell. In Sleep, when all our Ideas are magnified, those of Feeling, Taste, and Smell, are often sufficiently vivid and distinct; and the same thing happens in some few Cases of Vigilance....

This Correspondence of the diminutive Vibrations to the original sensory ones, consists in this, that they agree in Kind, Place, and Line of Direction; and differ only in being more feeble, i.e. in Degree.

This Proposition follows from the foregoing. For since Sensations, by being often repeated, beget Ideas, it cannot but be that those Vibrations, which accompany Sensations, should beget something which may accompany Ideas in like manner; and this can be nothing but feebler Vibrations, agreeing with the sensory generating Vibrations in Kind, Place, and Line of Direction.

Or thus: By the First Proposition it appears, that some Motion must be excited in the medullary Substance, during each Sensation; by the Fourth, this Motion is determined to be a vibratory one: Since therefore some Motion must also, by the Second, be excited in the medullary Substance during the Presence of each Idea, this Motion cannot be any other than a vibratory one: Else how should it proceed from the original Vibration attending the Sensation, in the same manner as the Idea does from the Sensation itself? It must also agree in Kind, Place, and Line of Direction, with the generating Vibration. A vibratory Motion, which recurs t times in a Second, cannot beget a diminutive one that recurs $\frac{1}{2}\ t$, or $2\ t$ times; nor one originally impressed on the Region of the Brain corresponding to the auditory Nerves, beget diminutive Vibrations in

the Region corresponding to the optic Nerves; and so of the rest. The Line of Direction must likewise be the same in the original and derivative Vibrations. It remains therefore, that each simple Idea of Sensation be attended by diminutive Vibrations of the same Kind, Place, and Line of Direction, with the original Vibrations attending the Sensation itself: Or, in the Words of the Proposition, that sensory Vibrations, by being frequently repeated, beget a Disposition to diminutive Vibrations corresponding to themselves respectively. We may add, that the vibratory Nature of the Motion which attends Ideas, may be inferred from the Continuance of some Ideas, visible ones for instance, in the Fancy for a few Moments.

This Proof of the present Proposition from the foregoing, appears to be incontestable, admitting the Fourth: However, it will much establish and illustrate the Doctrines of Vibrations and Association, to deduce it directly, if we can, from the Nature of vibratory Motions, and of an animal Body; and not only from the Relation between Sensations and Ideas. Let us see, therefore, what Progress we can make in such an Attempt.

First then, If we admit Vibrations of the medullary Particles at all, we must conceive, that some take place in the *Fœtus in Utero,* both on account of the Warmth in which it lies, and of the Pulsation of those considerable Arteries, which pass through the medullary Substance, and which consequently must compress and agitate it upon every Contraction of the Heart. And these Vibrations are probably either uniform in Kind and Degree, if we consider short Spaces of Time; or, if long ones, increase in a flow uniform manner, and that in Degree only, as the *Fœtus* in Utero increases in Bulk and Strength. They are also probably the same in all the different Regions of the medullary Substance. Let these Vibrations be called the *Natural Vibrations.*

Secondly, As soon as the Child is born, external Objects act upon it violently, and excite Vibrations in the medullary Substance, which differ from the natural ones, and from each other, in Degree, Kind, Place, and Line of Direction. We may also conceive, that each Region of the medullary Substance has such a Texture as to receive, with the greatest Facility, the several specific Vibrations, which the Objects corresponding respectively to these Regions, i.e., to their Nerves, are most disposed to excite. Let these Vibrations be, for the present, called *preternatural* ones, in Contradistinction to those which we just now called *natural ones.*

Thirdly, Representing now the natural Vibrations by N, and the preternatural ones, from various Objects, by A, B, C, etc. let us suppose the first Object to impress the Vibrations A, and then to be removed. It is evident from the Nature of vibratory Motions, that the medullary Substance will not, immediately upon the Removal of this Object, return to its natural State N, but will remain, for a short Space of Time, in the preternatural State A, and pass gradually from *A* to N. Suppose the same Object to be impressed again and again, for a sufficient Number of Times, and it seems to follow, that the medullary Substance will be longer in passing from *A* to *N,* after the second Impression, than after the first,

after the third Impression than second, & c. till, at last, it will not return to its natural original State of Vibrations *N* at all, but remain in the preternatural State A, after the Vibrations have fallen to a diminutive Pitch, their Kind and Place, or chief Seat, and their Line of Direction, continuing the same. This State may therefore be fitly denoted by *a,* and, being now in the Place of the natural State *N,* it will be kept up by the Heat of the medullary Substance, and the Pulsation of its Arteries. All this seems to follow from the above-mentioned Disposition of animal Bodies to accommodate themselves to, and continue in, almost any State that is often impressed; which is evident from innumerable both common and medical Observations, whatever be determined concerning the Manner of explaining and accounting for these Facts. For the Alterations which Habit, Custom, frequent Impression, & *c.* make in the small constituent Particles, can scarce be any thing besides Alterations of the Distances, and mutual Actions, of these Particles; and these last Alterations must alter the natural Tendency to vibrate. We must, however, here resume the Supposition made in the last Paragraph, *viz.* that the several Regions of the Brain have such a Texture as disposes them to those specific Vibrations, which are to be impressed by the proper Objects in the Events of Life. And this will much facilitate and accelerate the Transition of the State *N* into *a;* since we are to suppose a Predisposition to the State *A,* or *a.*