1. The Age of Trickery

Draft: don't circulate

The passion for philosophy, like that for religion, seems liable to this inconvenience, that, though it aims at the correction of our manners, and extirpation of our vices, it may only serve, by imprudent management, to foster a predominant inclination, and push the mind, with more determined resolution, towards that side, which already draws *too much, by the biass and propensity of the natural temper.*

Hume, *Enquiry,* 5 "Sceptical solution to these doubts"

The history of similarity toolmaking begins at the Age of trickery. It is the age of the rise of the first Humeans; the age of scepticism.

Some knowledge of the environment, lifestyle, and traditions of ancestral Humeans is compulsory to draw an accurate picture of the roles and working of the similarity tools that emerged at the Age of trickery. Section 1.1 provides a brief account of their environment and lifestyle. Section 1.2 focuses on their creation myth – the origin of ideas – and emphasises the crucial roles that similarity relations play in it. But what distinguishes early Humean culture in the history of similarity toolmaking is its use of similarity tools in accounts of "cognitive trickeries": processes by which the human mind tricks itself into forming false beliefs about the reliability of arguments and about the origin or nature of certain ideas. To understand why this distinctive role for similarity tools emerged at the Age of trickery Section 1.3 explores the prehistory of early Humean culture and derives from it a model of cognitive trickery: the Xenophobia model of Homo Spinozis. Armed with the material of Sections 1.2 and 1.3 we will be able to explain how our Humean ancestors crafted similarity tools and combined them with other tools to expose the mechanisms of cognitive trickery and protect themselves against it. We will do so in Section 1.4 focusing on three case studies: how the human mind forms false beliefs

about the reliability of arguments from experience, about the origin of the idea of necessary connection, and about the nature of abstract ideas. While Sections 1.2 and 1.4 focus mainly on how similarity tools were used by primitive Humeans at the Age of trickery, Section 1.5 focuses on the nature of these tools: it provides a classification of relevant similarity relations and emphasises some of their features.

1.1 Environment and lifestyle of the first Humeans

We have learned that, like most hominins of their time, ancestral Humeans already mastered agriculture and writing. Their family structure was nuclear and flexible, allowing for a relative independence of individuals inside the group and for the development of individual thinking. There is evidence that the first Humeans had frequent contacts with other tribes of Homo Philosophicus with which they shared a large territory corresponding roughly to Western Europe. Although there was a certain amount of hostility leading to frequent wars, trading and marriages across tribes on this territory were not uncommon. Indeed, it seems that such exchanges have been encouraged within early Humean culture: for instance, there is evidence that ancestral Humeans from south-east Scotland initiated trading with a pre-republican group from the Lemanic Arc.

The lifestyle and values of the first Humeans distinguish them from other cultures of their time. While most tribes on the territory of western Europe organised their social life around a large public building devoted to religious cult, there is little evidence of religious gatherings in early Humean culture. Their apparent lack of religiosity is not to be explained by an absence of metaphysical creation myth, however. Like most of their contemporaries, ancestral Humeans endorsed such a myth. But, while the creation myth of other tribes was, almost invariably, chiefly concerned with the intelligent creation of the external world, the creation myth of the first Humeans is chiefly concerned with the creation of our *inner* world: the origin of ideas. This creation myth will be fully displayed in Section 1.2. Let us only notice that this distinctive feature of early Humean culture does not reflect any kind of scepticism about the existence of external physical objects. On the contrary, it seems that our Humean ancestors took the existence of external physical objects for granted and in no need for explanation. According to them, what is in need for explanation is the existence of certain ideas and beliefs. This explains the specificity

of their creation myth – the fact that this it is a myth of origin of our *inner* world – as well as their lack of religious anxiety about the origin of the external world.

Early Humean societies were strongly attached to mass education: in sciences, history, and the arts. For them, education was firstly empirical: observation and experience was positively valued, studying the knowledge they provide us with was strongly encouraged. But our Humean ancestors were also humble about their ability to make their environment intelligible via inferences from observation and experience. In general, early Humeans were a suspicious people, which explains why they called themselves "sceptics". The explanation of their suspicious attitude is partly to be found in the hostility of their environment: after all, they were surrounded by rival philosophical tribes with expansionist ambitions and with which they were frequently at war.

Let us quickly describe the enemies of the first Humeans to appreciate their distinct character. Those tribes were largely from Cartesian descent. Ancestral Humeans used to call them "dogmatists" in opposition to "sceptics". But it would be a mistake to exacerbate differences: there are clear signs of Cartesian influence in early Humean culture. Cartesian and Humean tribes shared common values, rituals, and tools: they both had ceremonials where praising reason and clear thinking was ritualised, they both appealed to scientific tools taken from early arithmetic, geometry, and mechanics. Indeed, although the first Humeans liked to define themselves in opposition to those dogmatist tribes that evolved from the Cartesian matrix, they were close neighbours and were united by a common antipathy for more distant tribes: the "scholastics". The scholastics were archaic specimens of Homo philosophicus. At the Age of trickery, their culture was declining and survived mainly because of the protection of religious authorities to which dogmatist tribes were still connected. Perhaps because of this connection, scholastic and dogmatist tribes displayed similarities that were despicable for our Humean ancestors: an attachment to popular superstition as well as to abstruse metaphysical lingo.

The values and beliefs of tribes belonging to the dogmatist culture are well-documented and there is no need for us to describe them in detail. It suffices to say that the first Humeans regarded dogmatists as vain, prejudiced and superstitious,[1] as propagating a "false and

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[1] E, 1 §11: "[a considerable part of metaphysics] arise[s] either from the fruitless efforts of human vanity, which would penetrate into subjects utterly inaccessible to the understanding, or from the craft of popular superstitions, which, being unable to defend themselves on fair ground, raise these intangible brambles to cover and protect their

adulterate metaphysics" (E, 1 §12), and as giving themselves a false air of science and wisdom.[2] Most importantly, the first Humeans were convinced that their dogmatist rivals were victims of a specific form of cognitive trickery, that they had been tricked by the own mind in forming false beliefs about themselves and the world they lived in. Ancestral Humeans were eager to protect themselves against any sort of cognitive trickery which they legitimately regarded as a threat. To do so they undertook a careful examination of the mechanisms of cognitive trickery to break it up into pieces. It is for this purpose that they crafted similarity tools. This is how the age of trickery – the first step in the evolution of similarity toolmaking – emerged. But to understand the roles that similarity relations came to achieve in the exposition and demolition of cognitive trickery, we must understand the creation myth of the first Humeans.

1.2 The origin of ideas

This section provides an account of the creation myth of the first Humeans, which concerns the origin of ideas.

There are ideas: of colours (E, 2 §8 and 4.2 §21), sounds (E, 2 §8), consistence (E, 4.2 §21), ideas of objects like mountains (E, 2 §5), or individuals like God (E, 2 §6). According to early Humean culture, ideas are perceptions of the mind, but they are weak and not very vivid ones (E, 2 §3). Part of what this means is that ideas are naturally faint and obscure, that boundaries between them are vague (E, 2 §9).

Ancestral Humeans were impressed by the mind's ability to freely transform and recombine ideas in imagination.[3] They could observe that simple ideas, like those of gold, wings, a mountain and a horse, can be freely recombine in imagination to form new and complex

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weakness. Chaced from the open country, these robbers fly into the forest, and lie in wait to break in upon every unguarded avenue of the mind, and overwhelm it with religious fear and prejudices."

[2] E, 1 §12: "Accurate and just reasoning is the only catholic remedy, fitted for all persons and all dispositions; and is alone able to subvert that abstruse philosophy and metaphysical jargon, which, being mixed up with popular superstition, renders it in a manner impenetrable to careless reasoners, and gives it the air of science and wisdom."

[3] E, 2 §4: "Nothing, at first view, may seem more unbounded than the thought of man, which not only escapes all human power and authority, but is not even restrained within the limits of nature and reality. To form monsters, and join incongruous shapes and appearances, costs the imagination no more trouble than to conceive the most natural and familiar objects."

ideas, like those of a golden mountain, a winged horse, a golden horse, or a winged mountain.[4] They also believed that some simple ideas, like that of an infinite intelligence, can be produced simply by freely transforming another simple idea, the idea of our own intelligence, in imagination (E, 2 §6).

Let us say that an idea is *new* if and only if it is derived from one or several ideas and that it is *original* just in case it is not derived from any idea. Reflecting upon the unbounded power of human imagination, our Humean ancestors wondered whether every idea is new or whether some idea is original. The central claim of their creation myth is that there are original ideas and so not every idea is new. Early Humeans held an even stronger claim, namely that every new idea derives from original ideas by operations of the mind. Yet this claim immediately yields a further question: where do original ideas come from? The first goal of the early Humean creation myth was to answer this question.

But their creation myth had a second purpose. Ancestral Humeans maintained that, as such, our faculty to recombine and transform ideas in imagination is *unrestricted*. It allows for representations of reality that carve at its natural joints and anywhere else, and it does not discriminate between representations of what there is and representations of what is not but might have been. Yet, our Humean ancestors observed, the formation of new ideas usually obeys *principles*, which they named "principles of association" (E, 3). New ideas formed according to these principles seemed to them to be more likely to conduct knowledge than new ideas formed by mere imagination. But what are these principles? This is the second question that the Humean creation myth aimed to address.

Before we explain how the first Humeans answered these questions, it is important to remember that it was not uncommon for dogmatists to be innatist. The doctrine of innatism

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[4] E, 2 §5: "But though our thought seems to possess this unbounded liberty, we shall find, upon nearer examination, that it is really confined within very narrow limits, and that all this creative power of the mind amounts to no more than the faculty of compounding, transposing, augmenting, or diminishing the materials afforded us by the senses and experience. When we think of a golden mountain, we only join two consistent ideas, *gold*, and *mountain*, with which we were formerly acquainted. A virtuous horse we can conceive, because, from our own feeling, we can conceive virtue; and this we may unite to the figure and shape of a horse, which is an animal familiar to us". See also T, 1.1.4.

held by those dogmatist tribes that emerged from the Cartesian matrix can be traced back to the words of their Prophet:

> Nothing reaches our mind through the sense organs except certain corporeal motions … But neither the motions themselves nor the figures arising from them are conceived by us exactly as they occur in the sense organs … Hence it follows that the very ideas of the motions themselves and of the figures are innate in us. The ideas of pain, colours, sounds and the like must be all the more innate if, on the occasion of certain corporeal motions, our mind is to be capable of representing them to itself, for there is no similarity between these ideas and the corporeal motions." (Descartes, *Comments on a Certain Broadsheet;* CSM 1: 304)

This verse is of great interest regarding the purpose of this book since it contains two arguments for innatism that rely on two notions of similarity. First, it is argued that ideas of *corporeal motions* are innate because no idea of a corporeal motion is *exactly similar* to such a corporeal motion – *i.e.* there is always *some* difference between them. Second, it is argued that our ideas of *the external source* of corporeal motions are innate because there is *no similarity* between these ideas and corporeal motions – *i.e.* they are *exactly dissimilar*. (See Section 1.5 below on varieties of similarity relations) Arguably, it is difficult to understand how the conclusion of the first argument is supposed to follow from its premise. It is also difficult to understand how the premise of the second argument is supposed to be justified.

According to innatism, every idea has a *mental* origin. But this doctrine faces an immediate challenge: some of our ideas *seem* to come from sensory impressions – *i.e.* to have a physical origin. For instance, our ideas of colours and shapes seem to come from *perceptions* of colours and shapes in our (physical) environment. If all our ideas come from the mind, as innatists claimed, then why is it so that some ideas seem to derive from sensory impressions? To solve this problem, dogmatists almost invariably appealed to *their* creation myth according to which the human mind is a creation of a much superior mind who is, ultimately, responsible for the ideas we have. Some of them explained the appearance of mind-body interaction by a perpetual miracle, the direct action of God's mind on our mind in the production of new ideas at the *occasion* of bodily movements;[5] others explained it in terms of a harmony between ideas and

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[5] Malebranche, *De la recherche de la vérité.* See also E, 7.1.

corresponding bodily movements pre-established by this superior mind.[6] But, for our Humean ancestors, these "solutions" were mere appeals to the craft of popular superstition to cover and protect the weakness of innatism (E, 1 §11 and 2 §9 n. 1).

Innatism is challenged by the fact that some of our ideas *seem to* derive from sensory impressions. Having no reason to distrust appearances, the first Humeans concluded that original ideas must come from "the materials afforded us by the senses and experience" (E, 2 §5), which they called outward and inward *impressions* respectively. Impressions are perceptions that are stronger and more vivid than ideas: what we hear, or see, or feel, or love, or desire, or will (E, 2 §3). The following picture of the mind, the creation myth of Humean culture, finally emerged:

1. In the beginning, there were impressions, outward or inward, and it was the first day.

2. While reflecting on its impressions and getting conscious of them, the mind *copies* them.[7] These first mental copies of impressions are *original* ideas, and it was the second day.

3. Then was chaos in the realm of ideas: monsters, golden mountains, fiery dragons, virtuous horses and a manifold of further new ideas, all emerging from the matrix of original ideas through the mind's unbounded ability to *freely transform or recombine* any idea in imagination. *Anything went*, and it was the third day.

4. Finally, order emerged from chaos through the principles of associations of ideas:

    (P1) *Similarity* or *resemblance*;
    (P2) *Contiguity* in space and time;
    (P3) *Cause* or *Effect*;

    and it was the fourth day.

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[6] Cf. Leibniz's *New system of the nature of substances and their communication, and of the union which exists between the soul and the body*.

[7] E, 2 § 3*:* 'All impressions are distinguished from ideas, which are the less lively perceptions, of which we are conscious, when we reflect on any of those sensations or movements above-mentioned.'

This is the creation myth of the first Humeans. Further questions of understanding about its content ought to be addressed.

First, regarding the second day, it is important to notice that the early Humean conception of the copy-relationship between impressions and original ideas is a complex asymmetrical relationship that is (i) partly a matter of temporal contiguity – we have impressions and *then* we form original ideas when reflecting on them – (ii) partly causal – an original idea *derives from* an impression which it copies – and (iii) partly a matter of *similarity* : original ideas are *similar* to the impressions they copy.[8] Thus our *idea* of the copy-relationship between impressions and ideas is already the product of the joint work of the three principles of associations (P1)-(P3).

It is important to stress that, according to the early Humean understanding of impressions and ideas, it is analytic that the similarity between impressions and corresponding original ideas is *in*exact. This is so because, by definition, impressions are *stronger* and more *vivid* than ideas. Thus, necessarily, for any idea *d* and any impression *m*, *m* and *d* are dissimilar at least with respect to their *quality* – their degree of strength and vividness.[9]

Regarding the description of the 3rd day, let us emphasise that there is textual evidence that our Humean ancestors believed that the claim that we can freely recombine and transform

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[8] See E, 2 §6: "We may prosecute this enquiry to what length we please; where we shall always find, that every idea which we examine is copied from a similar impression." The similarity between ideas and impressions is emphasised more strongly in T, 1.1.1 §§5-6: "After the most accurate examination, of which I am capable, I venture to affirm, that the rule here holds without exception, and that every simple idea has a simple impression, which resembles it; and every simple impression a correspondent idea. (…) Thus we find, that all simple ideas and impressions resemble each other;" Notice that, put together, these passages suggest that Hume took "similarity" and "resemblance" as synonymous. We shall follow Hume in this respect until Section 1.5. where we will introduce a technical distinction between similarity and resemblance for the sake of clarity.

[9] The belief that, according to Hume, an original idea and the impression it copies are exactly similar is mistaken. Yet this mistake originates in Hume's writings. In his *Treatise* (T, 1.1.1 §3 and §7) Hume claims that ideas are "exact representations of" impressions. This may suggest that they are exactly similar. But, in fact, there is no evidence that, for Hume, exact representation entails exact similarity. On the contrary, there is textual evidence that Hume distinguishes between *what ideas are* and *how they represent* when he says, for instance, that abstract ideas *are* "in themselves individual" but "become general in their representation" (see T, 1.1.7 §6 and Section 1.4.3. below). This allows for the possibility of exact representation without exact similarity. In any case, the claim that an original idea is an "exact representation" of the impressions it copies is not to be found in Hume's *Enquiry*, his mature work.

ideas in imagination follows from the *unrestricted* separability of distinct impressions.[10] Early Humeans were committed to the claim that, for every distinct impressions x and y, x is separable from y. But notice that this claim is weaker than the claim, which is often ascribed to them, according to which, for every distinct entities x and y, x is separable from y – *i.e.* such that there is no necessary connection between them. Indeed, not every entity is an impression. Some entities are *objects* or *sources* of impression – remember that impressions are perceptions. Yet, there is no good reason to think that, for early Humeans, the unrestricted separability of distinct impressions entails the unrestricted separability of the *objects* or *source* of these impressions. On the contrary, there is evidence that, for our Humean ancestors, separation sometimes is merely *of reason*:

> Thus when a globe of white marble is presented, we receive only the impression of a white colour dispos'd in a certain form, nor are we able to separate and distinguish the colour from the form. But observing afterwards a globe of black marble and a cube of white, and comparing them with our former object, we find two separate resemblances, in what formerly seem'd, and really is, perfectly inseparable. After a little more practice of this kind, we begin to distinguish the figure from the colour by a *distinction of reason*; (T, 1.1.7 §18)

We will come back to the distinction of reason in Section 1.4.3 and to the metaphysics of modality in subsequent chapters.

More importance at this stage is the 4th day of the early Humean creation myth: the introduction of the principles of association (P1)-(P3) as principles of *order*. How these principles are meant to create order in our imagination for the formation of ideas can be appreciated by studying how the first Humeans dealt with exceptions to the rule that every simple idea is a (modified or original) copy of an impression.

Some simple ideas do not seem to be copies of any impression. If so, a moderate version of innatism according to which at least *some* ideas are innate seems plausible. Our Humean

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[10] T, 1.1.3 §4: "The same evidence follows us in our second principle, *of the liberty of the imagination to transpose and change its ideas*. The fables we meet with in poems and romances put this entirely out of question. Nature there is totally confounded, and nothing mention'd but winged horses, fiery dragons, and monstrous giants. Nor will this liberty of the fancy appear strange, when we consider, that all our ideas are copy'd from our impressions, and that there are not any two impressions which are perfectly inseparable. (…) Wherever the imagination perceives a difference among ideas, it can easily produce a separation."

ancestors were aware of this difficulty, agreed that some simple ideas are not copies of any impression, but denied that this justifies any form of innatism. The following text allows us to understand their stance on this delicate issue:

> I believe it will readily be allowed, that the several distinct ideas of colour, which enter by the eye, or those of sound, which are conveyed by the ear, are really different from each other; though, at the same time, resembling. (…) Suppose, therefore, a person to have enjoyed his sight for thirty years, and to have become perfectly acquainted with colours of all kinds, except one particular shade of blue, for instance, which it never has been his fortune to meet with. Let all the different shades of that colour, except that single one, be placed before him, descending gradually from the deepest to the lightest; it is plain that he will perceive a blank, where that shade is wanting, and will be sensible, that there is a greater distance in that place between the contiguous colours than in any other. Now I ask, whether it be possible for him, from his own imagination, to supply this deficiency, and raise up to himself the idea of that particular shade, though it had never been conveyed to him by his senses? I believe there are few but will be of opinion that he can: And this may serve as a proof, that the simple ideas are not always, in every instance, derived from the correspondent impressions; … (E, 2 §8)

This early Humean account of how someone can acquire a simple idea, like the idea of a missing shade of blue, without having a corresponding impression is impressive. What transpires from it is that, according to our ancestors, it is through a comparison of *similarity* and *contiguity orderings* that such a simple idea is formed.

Let us reconstruct their account: First, we suppose an agent who has "enjoyed his sight for thirty years" and is "perfectly acquainted with colours of all kinds." Thus our agent is *accustomed* with colours, where *Custom* is an important sort of *Cause* in early Humean culture (see e.g. E, 5.1 §5). Second, we suppose that all the shades of blue, except for the missing one, are "placed before" our agent, "descending gradually from the deepest to the lightest". Hence, a similarity *ordering* of shades of blue is assumed, and colours are *ordered* in contiguity (of place) in front of our agent according to this similarity *ordering*. Our agent's acquaintance with colours allows him to judge that a shade of blue is *missing* in the ordering that is in front of him. More precisely, it is a *mismatch* between the similarity ordering among shades that he *expects* – given his acquaintance with colours – and the similarity ordering among shades that he *observes* – given the contiguity ordering between shades – that allows him to draw this conclusion: contrary to

his *expectation*, there appears to be two contiguous shades of blue that are less similar to each other in hue than any other two contiguous shades of blue are. In semi-formal language:

> **Difference in resemblance**: There are contiguous shades of blue *w* and *x* such that, for any shades of blue *y* and *z* (such that either *y* or *z* is non-identical to both *w* and *x*), *y* and *z* are more similar with respect to hue than *w* and *x* are similar with respect to hue.

[Readers should notice how complex this similarity relation is: it is a *six-termed* relation of comparative similarity is some respect. Its logical form is "*w* is at least as similar to *x* with respect to r^i as *y* is similar to *z* with respect to r^j"; more on this in Section 1.5.] The mismatch between the *observed* and the *expected* similarity orderings is what leads our agent to form the belief that a shade of blue is missing and *an idea* of this shade of blue. This wonderful account of how we can form simple ideas that are not copies of impressions relies on similarity, contiguity and causal *orderings*. It blocks the innatist challenge because, according to this account, the idea of the missing shade of blue comes from impressions of *other* shades of blue, although it is not itself a copy of such an impression. We hope this account of the Missing shade of blue thought experiment helps understanding why it seems that the first task of the Humean *principles of association* is to be principles of *ordering*.

According to the early Humean creation myth, the three principles of association *create* order out of chaos. This is metaphorical discourse, and we should not take it with too much philosophical seriousness. Taken seriously, the metaphor may suggest that, according to the first Humeans, similarity, contiguity, and cause are *ultimate reasons* or *metaphysical grounds* of order among ideas. But the following text rather indicates that they were agnostic about whether principles of association are ultimate reasons or metaphysical grounds; this text concerns *Custom*, which is arguably the most important *causal* tool in early Humean tradition, but its content can plausibly be generalised to other Humean principles:

> This principle is CUSTOM or HABIT. For wherever the repetition of any particular act or operation produces a propensity to renew the same act or operation, without being impelled by any reasoning or process of the understanding; we always say, that this propensity is the effect of *Custom*. By employing that word, we pretend not to have given the ultimate reason of such a propensity. We only point out a principle of human nature, which is universally acknowledged, and which is well known by its effects. Perhaps we can push our enquiries no farther, or pretend

to give the cause of this cause; but must rest contented with it as the ultimate principle, which we can assign, of all our conclusions from experience. It is sufficient satisfaction, that we can go so far; without repining at the narrowness of our faculties, because they will carry us no farther. (E, 5.1 §5)

We believe that this text nicely illustrates the early Humean attachment to a true metaphysics that avoids "abstruse philosophy, metaphysical jargon, and popular superstition". Whether a principle like custom is a "ultimate reason" is something ancestral Humeans preferred to remain agnostic about. For them, a principle is a good one if it is "universally acknowledged and well-known by its effects", hence a principle we are familiar with and whose consequences and roles are well-understood. Whether it is a "ultimate reason" matters not since it is not something that our faculties allow us to determine. There are important lessons to be drawn from this ancient, forgotten, wisdom.

1.3 Xenophobia model of cognitive trickery

The Humean principles of association are principles of ordering for the formation of new ideas. These principles are able of the best and of the worst. On the one hand, they allow us to acquire new knowledge about ourselves and our environment, like the knowledge that a shade of blue is missing (in the missing shade of blue thought experiment). But, on the other hand, they can *deceive us*, leading us to rely on unreliable inferences for action and to have false beliefs about the world and ourselves. How they can deceive those who misunderstand them and their effects is the main topic of the remaining of this chapter.

Ancient tribes used to predict how events will unfold from the interpretation of signs. Some predicted seven years of famine from a dream about seven cows; others took the appearance of a comet as an omen for an upcoming battle. It was not uncommon to rely on such predictions for action: for instance, to justify imminent attacks or bloody sacrifices to appease a god or goddess. Those who made such predictions often appealed to beliefs about necessary connections between past and future events to justify them. According to our Humean ancestors, these beliefs were suspicious and these predictions were unreliable. And yet we are easily tricked in relying on such beliefs and predictions. For the first Humeans, the explanation of this is to be found in some specific interactions of the three principles of association: similarity,

contiguity, and *Cause* – especially *Custom*. The specificity of early Humean culture is their account of the mechanisms at work in the formation of ideas that are responsible for this sort of cognitive trickery.

But the origin of their account of cognitive trickery can be traced back to their prehistory, or so we believe. Ancestral Humeans were familiar with the story of one of their ancestors: a specimen of Homo Spinozis, the descendent of a tribe from the Iberian Peninsula that suffered religious persecutions and had to emigrate to the north of Europe. This story tells about the adventures of this ancestor with other members of his tribe and with the locals of their new settlement. It ends with a concluding moral which is, in a nutshell, an account of how xenophobic and *xenophilic* thoughts are formed. Xenophobic thoughts typically oppose a positively valued *We* – people who exhibit shared superficial biological, historical, or cultural traits – to a negatively valued *Them* – people from distant origin having different superficial biological or cultural traits:[11] for instance, the We of native Europeans opposed to the Them of refugees, the We of white Americans opposed to the Them of Mexicans or Afro-Americans, etc. At the birth of early Humean culture, children were often told this story to warn them against such thoughts. Its concluding moral is of great value for us since it can be used as a model of how the Humean principles of association account for the working of the kind of cognitive trickery at work in predictions and beliefs about necessary connections. It goes as follows:

> *From the mere fact that we imagine a thing to have some likeness to an object that usually affects the Mind with Joy or Sadness, we love it or hate it, even though that in which the thing is like the object is not the efficient cause of these effects.*[12]
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> [From this it follows that] *If someone has been affected with Joy or Sadness by someone of a (…) nation, different from his own, and this Joy or Sadness is accompanied by the idea of that person as its cause, under the universal name of the (…) nation, he will love or hate, not only that person, but everyone of the same (…) nation.*[13]

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[11] See e.g. Micheli 2011.

[12] Proposition 16 of Part 3 of Spinoza's *Ethics*. Translation by Edwin Curley, *The Collected Works of Spinoza*, volume 1, Princeton University Press. The original Latin says: "Ex eo solo, quòd rem aliquid habere imaginamur simile objecto, quod Mentem Laetitiâ, vel Tristitiâ afficere solet, quamvis id, in quo res objecto est similis, non sit horum affectuum efficiens causa, eam tamen amabimus, vel odio habebimus."

[13] Proposition 46 of Part 3 of Spinoza's *Ethics*. Spinoza merely refers to Proposition 16 of Part 3 in his demonstration of Proposition 46. This is why we've put them together. Here is the original Latin version of Proposition 46: "Si quis ab aliquo cujusdam classis, sive nationis à suâ diversae, Laetitiâ, vel Tristitiâ affectus fuerit, concomitante ejus

Let us focus on the xenophobic side of this text and call its content "the Xenophobia model" of cognitive trickery. The virtue of this model is that it explains how xenophobic thoughts are formed without justifying them: according to it, xenophobic thoughts are *hateful* thoughts directed to members of a nation who have not caused any harm ("is not the efficient cause of these effects") but who are objects of this hate because of their superficial similarity with other members of their nation whose actions have caused some harm. To our knowledge, no account of why recent terrorist attacks across Europe have created a climate of islamophobia is more accurate than that.

According to the Xenophobia model, xenophobic thoughts result from a form of cognitive trickery: the mind get tricked into hating people from another nation, who are not the cause of this hate, in virtue of superficial similarities between them and those who caused this hate in the first place. The Xenophobia model appears to account for this sort of cognitive trickery in terms of *free imaginative recombination, similarity, contiguity,* and *custom*: the very conceptual tools that are at the core of the Humean account of this sort of cognitive trickery which early Humeans purported to analyse and combat.

Here is a step-by-step reconstruction of how *free imaginative recombination of ideas, similarity, contiguity,* and *custom* account for xenophobic thoughts according to the Xenophobia model, where a contemporary example of such thoughts, namely *islamophobic thoughts*, is used for illustration:

a) A general ("universal") name, "Islam", applies to a collection of individuals: the members of a nation. There is an idea associated to this name, an *abstract idea*, which *represents generally* the members of this nation.

b) There is a pair of spatio-temporally *contiguous* events described as cause and effect. The cause is "an object affecting us with sadness" – for instance, a terrorist attack perpetrated by Islamists, which makes us sad. This cause is followed by an effect, namely "we hate this object" – for instance, we hate these people who committed this attack. Note that the first event of the pair concerns, in early Humean terms, an outward impression – we are affected by an external body – and that the second event concerns an inward

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ideâ, sub nomine universali classis, vel nationis, tanquam causâ: is non tantùm illum, sed omnes ejusdem classis, vel nationis amabit, vel odio habebit."

impression – a feeling of hate. Both impressions, let us assume, get *copied* in our mind: the outcome is the idea of a sequence having for first member an idea of the sadness caused by these people who perpetrated the terrorist attack and for second member an idea of our hate against them.

c) There is a repetition of pairs of *similar* contiguous events: a repetition of similar terrorist attacks by Islamists followed by similar feelings of hate towards whoever did this. Parallel to this repetition, there is a repetition of association of ideas: the idea of sadness caused by Islamist terrorist attacks associated to the idea of hate against Islamist terrorists. This repetition generates:

d) *Custom* (an object that "usually" affects the mind). What is this custom? The basic idea is that the repeated association, in our mind, of the idea of pain caused by Islamist terrorist attacks with the idea of hate towards Islamist terrorists generates a *propensity to expect* that the first impression or idea (pain caused by attack) will be followed by its *customary* contiguous impression or idea (hate against Islamists).

e) But custom plays a second role: there is also a repeated association of the general term, "Islam", with the object of sadness: perpetrators of Islamist terrorist attacks. As the idea of sadness becomes regularly and *customarily* associated with the meaning of this name, "Islam", a propensity to expect that the pair of ideas <sadness, Islam> will be followed by a feeling of hate against the customary object of this sadness becomes stronger in our mind.

f) This is where *free imaginative recombination* enters the picture: Since we can, in imagination, freely recombine ideas, our strengthened propensity to expect that <sadness, Islam> will be followed by a feeling of hate creates in our imagination a new association between the idea of Islam (salient *general* feature of those who affect us with sadness) and the idea of hate (the effect of our sadness).

g) And here we go: thanks to the free recombination of ideas, contiguity, similarity, and custom, the idea of hate and Islam become customarily associated in our imagination, and a new impression emerges: a propensity to expect a feeling of hate towards those to which the idea of Islam – the idea that is annexed to the general name "Islam" – applies. This impression gets copied to form a new idea: the idea of hate for Islam or Muslims. Since the idea of Islam applies to every random Muslim as much as it does to Islamist terrorists, the outcome is that the idea of individuals (Muslims) who are similar in this

respect to those who affected us with pain (Islamist terrorists) inspire us hate, even if these individuals are not the effective cause of this hate.

This sequence of events succeeds at explaining the formation of xenophobic thoughts, without justifying them. The reason why it does not justify them is that, although hating those who cause us pain is justified, there is *no necessary connection* between the salient respect of similarity – being a muslim – and the disposition to cause us pain (the relevant "secret power"). The cognitive process involved in this model is, according to the early Humean account of them, partly isomorphic to the cognitive process involved in arguments from experience, partly isomorphic to the cognitive process involved in the formation of the idea of necessary connection between cause and effect, and, to a lesser extent, partly isomorphic, to the cognitive process that allow particular ideas *qua* abstract ideas to be vicariously general.

Let us stress the specific role of similarity in this model. Its role is to explain the formation of a *customary* association. We have a sequence of pairs of contiguous entities $<x^1,y^1>$, $<x^2,y^2>$, …, $<x^n,y^n>$ such that every x^i and x^j among x^1… x^n are similar to each other and every y^i and y^j among y^1… y^n are similar to each other. If there were no such pattern of similarity – if, say, every x^i and x^j among x^1… x^n were similar to each other but many y^i and y^j among y^1… y^n were not similar to each other or *vice versa* – there would be no ground for *customary* association. Grounding customary association is the most characteristic role of similarity tools at the Age of trickery.

1.4 Cognitive trickery exposed – three case studies

Three sorts of cognitive trickery are especially damaging, according to early Humean culture: the belief that arguments from experience are as reliable as demonstrations, the belief that our idea of necessary connection between cause and effect originates in the presence of such a connection, and the belief that abstract ideas are genuinely general. For them, understanding why these beliefs are the product of some sort of cognitive trickery is extremely beneficial, on the other hand. Relying on the Xenophobia model, this section explains how the first Humeans accounted for the mechanisms at work in the formation of these beliefs using their four characteristic tools: free imaginative recombination, contiguity, similarity, and custom.

1.4.1 Arguments from experience

Early Humeans were attached to a distinction between two categories of inference: demonstrations and arguments from experience. Demonstrations are about relations of ideas and are deductive: for instance, the inference that Socrates is mortal from the premises that Socrates is a man and every man is mortal is a demonstration. Arguments from experience are inductive: for instance, the forecast that the sun will rise tomorrow is inductively derived from our experience that it did rise every morning so far, and the forecast that William will win the battle of Hastings is inductively derived from the appearance of Halley's comet before the landing of his army and from past experiences according to which the appearance of a comet was an omen for an upcoming change. It was not uncommon for primitive tribes to regard arguments from experience as being as reliable as demonstrations. Our Humean ancestors regarded this as a deep mistake.

As the previous examples should illustrate, arguments from experience are *variably* reliable: the forecast about the consequences of the appearance of a comet is much less reliable than the forecast about whether the sun will rise tomorrow. Since these arguments have roughly the same logical form this suggest that how much reliable they are cannot be a matter of logical structure. By contrast, the reliability of demonstrations is *fixed* and is a matter of logical form. It is the variable reliability of arguments from experience which led our Humean ancestor to conclude (a) that our belief in the reliability of arguments from experience and our belief in the reliability of demonstrations have different grounds and (b) that the former belief is not grounded in the logical form of such inferences.[14] But if so, an account of why we believe that arguments from experience are reliable when we do so is needed. This is what early Humeans aimed to do.

They construed arguments from experience as having the following form:

> (P1) *I have found that such an object has always been attended with such an effect*,
>
> (C) Therefore, *I foresee, that other objects, which are, in appearance, similar, will be attended with similar effects*. (E, 4.2 §16)

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[14] E, 4: "From causes, which appear *similar*, we expect similar effects. This is the sum of all our experimental conclusions. Now it seems evident, that, if this conclusion were formed by reason, it would be as perfect at first, and upon one instance, as after ever so long a course of experience. But the case is for otherwise."

Or

> (P1*) *I have found, in all past instances, such sensible qualities conjoined with such secret powers;*
>
> (C*) Therefore, *similar sensible qualities will always be conjoined with similar secret powers.* (E, 4.2 §21)

These two types of arguments from experience have different contents: the first concerns the prediction that a certain effect will follow from a certain cause, the second concerns the prediction that a certain *secret power* will be connected to a certain sensible quality. The difference is superficial because, according to early Humeans, our belief in the reliability of arguments of the first kind relies on the belief that the cause has a *secret power* that results in a *necessary connection* between the cause and the effect. Why we believe in such connections will be the topic of Section 1.4.2. At this stage, what matters for us is that the first Humeans construed *every* argument from experience as involving relations of similarity. Indeed, according to them,

> In reality, all arguments from experience are founded on the similarity, which we discover among natural objects, and by which we are induced to expect effects similar to those, which we have found to follow from such objects. (E, 4.2 §20)

Focusing on the second type of argument from experience, the early Humean explanation of their lack of (absolute) reliability roughly runs as follows. We can have impressions of sensible qualities. However, we cannot have any impression of a secret power. That we cannot have any impression of a secret power is analytic and does not depend on whether there are (or not) such powers: in Humean culture, that such a power is "secret" *means* that we cannot have any impression of it. Yet when we observe that similar interactions with objects having similar sensible qualities – for instance, eating an apple having a certain colour, shape, and texture – are followed by similar effects – for instance, the sensation of being nourished – then we infer that these qualities are attached to a *secret power* to *produce this effect*. Roughly, we have a repetition of sequences with similar members:

> a) There is a pair of spatiotemporally *contiguous events,* one of which is an impression of an object *o* (more precisely, of sensible qualities of *o*), the other being described as "the effect", *e.* Both events are impressions: we see the flames in the fireplace, we feel the

heat. These impressions are copied, we get a sequence of ideas – the idea of *o* and the idea of *e* – and the idea of this sequence – the idea of *e* follows the idea of *o*.

b) There is a repetition of similar contiguous events: a repetition of observations of objects similar to *o* followed by effects similar to *e*. Parallel to this repetition, there is a repetition of association of ideas: the idea of similarity to *o* is associated to the idea of similarity to *e*.

c) At some point in the series of repetitions of similar contiguous events, we infer: objects similar to *o* must have a secret power *p* which explains their constant contiguity with effects similar to *e*.

d) Further repetitions of contiguous events similar to observations of *o* and *e* reinforce this inference: each time, we associate the idea of *o* to the idea of *p*.

e) The repetition of similar sequences of events – and of corresponding similar ideas – generates *custom* and its effect *expectation*: we expect that future observations of objects similar to *o* will be linked to manifestations of *p* and its associated effect: the occurrence of an event similar to *e*.

f) We forecast, based on our expectations, that future observations of objects similar to *o* will be *connected* to manifestations of *p* and its associated effect: the occurrence of an event similar to *e*.

Yet such a forecast is not as reliable as a demonstration, according to ancestral Humeans, because "there is no known connexion between the sensible qualities and the secret powers".[15]

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[15] E, 4.2 §16. In context: "It must certainly be allowed, that nature has kept us at a great distance from all her secrets, and has afforded us only the knowledge of a few superficial qualities of objects; while she conceals from us those powers and principles on which the influence of these objects entirely depends. (…) Sight or feeling conveys an idea of the actual motion of bodies; but as to that wonderful force or power, which would carry on a moving body for ever in a continued change of place, (…); of this we cannot form the most distant conception. But notwithstanding this ignorance of natural powers and principles, we always presume, when we see like sensible qualities, that they have like secret powers, and expect, that effects, similar to those, which we have experienced, will follow from them. (…) It is allowed on all hands, that there is no known connexion between the sensible qualities and the secret powers; and consequently, that the mind is not led to form such a conclusion concerning their constant and regular conjunction, by any thing which it knows of their nature. As to past *Experience*, it can be allowed to give *direct* and *certain* information of those precise objects only, and that precise period of time, which fell under its cognizance: But why this experience should be extended to future times, and to other objects, which

But the lack of reliability of such an inference can also be derived from the structural similarity of the process from which it derives with the Xenophobia model. The conclusion of the Xenophobia model is, after all, a kind of forecast: here we forecast that certain people, members of a nation, have some specific secret power (some secret *disposition* for *evil*, maybe?) to generate pain among us and that they will manifest this power. Yet since we know that the process yielding to xenophobic thoughts explains why we have these thoughts without justifying we can derive, by structural similarity with our model, that the process yielding to forecasts in general explains why we believe in the conclusion of our forecasts without justifying this belief.

Some may still wonder why, if arguments from experience are not as reliable as demonstrations, we are nevertheless tricked in taking them to be reliable? The early Humean answer to this question is the *power* of custom:

> And it is certain we here advance a very intelligible proposition at least, if not a true one, when we assert, that, after the constant conjunction of two objects, heat and flame, for instance, weight and solidity, we are determined by custom alone to expect the one from the appearance of the other. This hypothesis seems even the only one, which explains the difficulty, why we draw from a thousand instances, an inference, which we are not able to draw from one instance, that is, in no respect, different from them. Reason is incapable of any such variation. (…) All inferences from experience, therefore, are effects of custom, not of reason. (E, 5.1 §5)

Custom, contiguity, and similarity are all involved in this account of how we come to believe in the reliability of arguments from experience.

Notice that this text suggests that the involved relation of similarity is exact: "an instance that is, in no respect, different, from" the others. But this is clearly an overstatement: for instance, there can be differences in shape, size and colour among the fires from which we have inductively inferred that making a fire will produce heat. Rather, the relevant similarity tool in the Humean account of arguments from experience seems to be a relation of *overall similarity* (see Section 1.5 on varieties of similarity).

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for aught we know, may be only in appearance similar; this is the main question on which I would insist. (…) At least, it must be acknowledged, that there is here a consequence drawn by the mind; that there is a certain step taken; a process of thought, and an inference which wants to be explained. These two propositions are far from being the same, *I have found that such an object has always been attended with such an effect*, and *I foresee, that other objects, which are, in appearance, similar, will be attended with similar effects*."

1.4.2. Our idea of necessary connection

Some arguments from experience involve beliefs about a secret power of the cause to produce the effect understood as a necessary connection between cause and effect. The belief that an effect is necessarily connected to its cause was common in dogmatist culture. Why did they believe in such a connection? Where does their idea of such a connection come from? According to the first Humeans, no idea, that pertains to dogmatist culture, is more obscure than that of necessary connection (E, 7.1 §3). What makes it obscure is that no such connection can ever be observed in any singular instance of a causal interaction.

We can perceive that effects follow causes. But we cannot have any *perception* of necessity.[16] Impressions are perceptions. We can have impressions of causal interactions—of a cause being followed by an effect. But no such impression can ever involve any impression of a *necessary* connection between cause and effect. Moreover, if an impression of a cause being followed by its effect were an impression of a necessary connection between cause and effect, it would not be possible to have an impression of the cause with no impression of its effect. Yet this is possible in virtue of the Humean commitment to the thesis of unrestricted separability of distinct impressions (see Section 1.2). Therefore, an impression of a cause being followed by its effect is not an impression of a necessary connection.

Nevertheless, dogmatist tribes believed that there is a necessary connection between cause and effect and they believed that their idea of a necessary connection between cause and effect originates in a genuine necessary connection between cause and effect. According to early Humeans, this dogmatist belief about the origin of their idea of necessary connection is unwarranted since they can have no impression of such a connection.[17] Still, since dogmatists did have an idea of a necessary connection our Humean ancestors had to offer an alternative account of its origin. They proposed such an account.

We are now familiar with this figure:

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[16] It does not matter whether the necessity involved is absolute or restricted.

[17] E, 7.1. Nothing in what I said so far entails that Hume *denies* that there are causally necessary connections. According to me, Hume was agnostic about this issue; cf. Beebee 2011. Reading Hume as agnostic about this issue is in line with the methodological guidelines of Section 1 of E.

a) There is a pair of spatiotemporally *contiguous events* described as cause, *c*, and effect, *e*, of which we have impressions: we see the white ball moving with speed in the direction of a still red ball, we hear the sound of an impact, then see the red ball moving.[18]

b) There is a repetition of similar contiguous events: a repetition of observations of events similar to *c* followed by effects similar to *e*. Parallel to this repetition, there is a repetition of associations of ideas: the idea of similarity to *c* is associated to the idea of similarity to *e*.

d) These repetitions generate *custom* and its typical effect, *a propensity of expectation*: the idea of similarity to *c*, which we get from further impressions of such similarities, becomes customarily associated to the idea of similarity to *e*, so that we tend to expect that future observations of events similar to *c* will be followed by events similar to *e*.

e) The customary connection between the idea of similarity to *c* and the idea of similarity to *e* generates a new inward impression, we *feel* a new sentiment:[19] we feel that if no event similar to *c* had occurred, no event similar to *e* would have occurred.[20]

g) An idea (copy) is derived from this new sentiment: the idea of a necessary connection.

This early Humean account of the origin of our idea of a necessary connection between cause and effect explains why we have such a belief *without justifying it*. It is explained by the customary

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[18] From the mere observation of *c* followed by observation of *e*, we cannot pronounce or infer that *c* is connected to *e*, all we have at this stage is contiguity; cf. E, 7.2 §28.

[19] E, 7.2 §30.

[20] Hume (E, 7.2 §29) famously gives two definitions of a cause, suggesting that it is the same one: "… we may define a cause to be *an object, followed by another, and where all the objects, similar to the first, are followed by objects similar to the second. Or in other words, where, if the first had not been, the second never had existed.*" David Lewis (1986) acknowledged that the second definition gives rise to a counterfactual analysis of causation that differs from the regularity analysis of causation inspired by the first definition. I agree. But we need to understand that Hume was not giving a definition of a cause here in the contemporary analytic sense of definition. In particular, Hume's idea of a definition is surely very remote from the Lewisian conception of a definition as being the product of *semantic* analysis; cf. Divers & Fletcher 2018. What Hume talks about is how the idea of a cause is formed. As I read him, the regularity is one step in this explanation of how this idea is formed, while the counterfactual is the idea which copies the *new sentiment* created by this regularity. For more on the counterfactual analysis of causation, see Chapter 3: The Age of Light Construction.

connection grounded in contiguous similarities. But it is not justified because events can be customary connected without being (genuinely) necessarily connected. This manner of explaining the formation of an idea without justifying this idea can be derived by the close structural similarity between this account of the origin of our idea of necessary connection and the Xenophobia model.

1.4.3 Abstract ideas

Since impressions are particular and since original ideas are copies of impressions the creation myth of early Humean culture allows us to believe that, according to the first Humeans, every original idea is particular. But what their creation myth does not tell us is whether there are ideas among the *new* ones – those that are not original – that are genuinely general. In this section, we explore the ancient Humean account of *abstract* ideas and how, according to them, these ideas are vicariously general.

According to early Humeans, abstract ideas are what general terms mean. The role of a general term is *re-identification*: when we designate something using a general term like "apple", "bacteria", "cookie", "diamond", or "emerald" instead of a proper name (Alice, Bob, Cordelia, David, and Emma) we thereby *emphasise* the similarity of this thing with other things. *Qua* meaning of general term, an abstract idea is an idea which, attached to such a term, allows for re-identification through re-application of the term.[21] This tells us what our Humean ancestors thought abstract ideas *do*, they also had a story to tell about which ideas *do* that.

If some ideas were general, then these ideas would be perfectly well-suited to play the role of abstract ideas. A general idea seems adequately fit for re-identification: it captures an identical feature among the objects to which the annexed general term is correctly applied. There were, among the dogmatist tribes to which ancestral Humeans were opposed, some who believed that abstract ideas are genuine general ideas. These tribes were misguided, or so our Humean ancestors believed. For them, every idea, abstract or not, is *particular*.

Why did early Humean endorse such a nominalist account of ideas? According to our sources, they derived this view from the belief that every idea has a precise degree of quantity

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[21] T, 1.1.7 §1: "A great philosopher [Berkeley] has disputed the receiv'd opinion in this particular, and has asserted, that all general ideas are nothing but particular ones, annex'd to a certain term, which give them a more extensive signification, and makes them recall upon occasion other individuals, which are similar to them."

and quality, *i.e.* that we cannot have the idea of something without having a precise idea of its quantity and quality (T, 1.1.7 §§2-3). It is unclear to us how this assumption is supposed to yield the intended conclusion. It is not clear why an idea couldn't be both general and absolutely precise. Never mind. What matters for our purpose is that, given their commitment to the claim that every idea is particular, an account of *how* an idea can both be particular and play the role of an abstract idea was needed. Such an account had also best be an account of *why* dogmatist tribes mistakenly believed that there are general ideas. Our Humean ancestors developed such an account of abstract ideas.

According to them, the difference between abstract and other ideas is not a difference in nature – they are all particular – but a difference in how ideas *represent*. Abstract ideas are merely vicariously general: they are particular ideas which, *qua* abstract, *represent generally*.[22] In other words, the Humean account of abstract ideas is a form of *ersatzism* about general ideas. The Humean distinction between *being general* and *representing generally* was also used to explain why some dogmatists believed that abstract ideas are general ideas, namely because they didn't understand how an idea could both be particular and represent generally. In order to appreciate this, we need to understand the cognitive process at work in general representation—that is to say, the process that allows us to use particular ideas as players of the role of abstract idea. This process does not involve *contiguity* but it involves both similarity and custom:

a) A recurring resemblance among several objects is observed.
b) Re-identifying objects that display this resemblance serves a "purpose of life".
c) Relative to this purpose of life, we apply a general term to these objects who display this resemblance, attaching no importance to differences among them (as these differences are *irrelevant* to this purpose of life). This generates,
d) Custom: hearing the general term revives the idea of one of these objects – call it "the paradigm" – which is imagined *as* particular.
e) But when we then apply the general term to *another* object, the general term does not revive the idea of each and every individual sensible quality of the paradigm, but merely revives the custom – and at the same time the idea of the paradigm – acquired

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[22] T, 1.1.7 §6: "Abstract ideas are therefore in themselves individual, however they may become general in their representation. The image in the mind is only that of a particular object, tho' the application of it in our reasoning be the same, as if it were universal".

by surveying other things that are relevantly similar to the paradigm. These similar things are not "really", or "in fact", present to the mind, but only "in power".

According to this account, abstract idea is identical to the idea of the paradigm, which is particular. Yet *qua* abstract idea the idea of the paradigm is also *vicariously* general. Take a red tomato and use it as a paradigm of red things. Q*ua* paradigm of red things the idea of the tomato is merely given "partial consideration". Arguably, what this means is that the idea of the tomato *qua* paradigm of red things is such that we attach great importance to similarity to it with respect to colour, and no importance to irrelevant (relative to our purpose of life) respects of comparison to it. Thus it is in virtue of a process of *selection* of respects of similarity to the paradigm that a *particular* idea can be *vicariously* general and play the role of abstract idea.[23]

Similarity is at the core of this account of the formation of abstract ideas because it grounds re-identification – the re-application of a general term to similar things. It is important to notice that two kinds of *Cause* are associated to similarity in this picture: there is, as usual *custom*; but there is also *purpose*. It is *purpose* that grounds the *selection* of relevant and important respects of similarity to the paradigm.[24]

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[23] Here is the relevant passage of T, 1.1.7 §7: "This application of ideas beyond their nature proceeds from our collecting all their possible degrees of quantity and quality in such an imperfect manner as may serve the purposes of life (…). When we have found a resemblance among several objects, that often occur to us, we apply the same name to all of them, whatever differences we may observe in the degrees of their quantity and quality, and whatever other differences may appear among them. After we have acquir'd a custom of this kind, the hearing of that name revives the idea of one of these objects, and makes the imagination conceive it with all its particular circumstances and proportions. But as the same word is suppos'd to have been frequently apply'd to other individuals, only touches the soul, if I may be allowed so to speak, and revives that fact present to the mind, but only in power; nor do we draw them all out distinctly in the imagination, but keep ourselves in readiness to survey any of them, as we may be prompted by a present design or necessity. The word raises up an individual idea, along with a certain custom; and that custom produces any other individual one, for which we may have occasion. But as the production of all the ideas, to which the name may be apply'd, is in most cases impossible, we abridge that work by a more partial consideration, and find but few inconveniencies to arise in our reasoning from that abridgment."

[24] On this, see what Hume (T, 1.1.7 §18) says about the distinction of *reason*: "When we wou'd consider only the figure of the globe of white marble, we form in reality an idea both of the figure and colour, but tacitly carry our eye to its resemblance with the globe of black marble: And in the same manner, when we wou'd consider its colour only, we turn our view to its resemblance with the cube of white marble." This way of "tacitly carrying our eye"

The early Humean account of the formation of abstract ideas can be used as an account of why dogmatists get tricked in falsely believing that abstract ideas are *genuinely* general. Their mistake is that they fail to appreciate the role of selective attention in this process: selective attention is what allows us to select just these features of our ideas that are relevant and important to serve our purposes.

Two caveats. Our description of the early Humean account of the formation of abstract ideas is restricted to abstract ideas formed from *a* resemblance between ideas; where, for any entities, there is a resemblance between them if and only if they are alike in some respect. Yet, according to ancestral Humeans, we can form general terms and abstract ideas from *comparative similarities*. For instance, *blue* and *green* are more similar to each other than *blue* and *scarlet* are. If so, according to them, our ideas of blue and green (which are copies of impressions of the respective colours) are more similar to each other than our ideas of blue and scarlet. Early Humeans seem to have thought that we can form abstract ideas based on such judgements of comparative similarity among simple ideas. Perhaps, what they had in mind here are *determinable* abstract ideas, such as the ideas *cold colour vs warm colour*. But this is only speculative.[25]

Second, the abstract ideas we have been focusing on are, according to early Humean tradition, such that there is a *connection* or *association* among the things to which the corresponding general term applies: this connection is *a* resemblance between all of them. Yet, according to early Humeans, there are other abstract ideas, so-called "very abstract" or "very general" ideas, such that there is no such *connection* between their objects. This deserves our attention.

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or "turning our view" is nothing but just turning our attention to *these* respects of similarity that are *relevant* relative to our *purpose* or *interest*.

[25] The relevant text is Hume's note on his account of abstract ideas in T, 1.1.7 §7: "'Tis evident, that even different simple ideas may have a similarity or resemblance to each other; nor is it necessary, that the point or circumstance of resemblance shou'd be distinct or separable from that in which they differ. *Blue* and *green* are different simple ideas, but are more resembling than *blue* and *scarlet*; tho' their perfect simplicity excludes all possibility of separation or distinction. 'Tis the same case with particular sounds, and tastes and smells. These admit of infinite resemblances upon the general appearance and comparison without having any common circumstance the same. And of this we may be certain, even from the very abstract terms *simple idea*. They comprehend all simple ideas under them. These resemble each other in their simplicity. And yet from their very nature, which excludes all composition, this circumstance, in which they resemble, is not distinguishable nor separable from the rest. 'Tis the same case with all the degrees in any quality. They are all resembling, and yet the quality, in any individual, is not distinct from the degree." What is difficult to understand is the relevance of the content of this note to Hume's account of abstract ideas.

Most of the time, what ancestral Humeans mean when they talk about resemblance or similarity is our *familiar* – folk – notion of resemblance or similarity. Since our familiar notion of similarity is equivocal, so is the early Humean discourse about similarity (See Section 1.5). But, usually, when the folk says that an object resembles another, the intended relation is construed as *non*-transitive. To understand this, consider the following table, where *a, b,* and *c* are objects and *F, G, H, I* are just these properties that are relevant to compare them:

	F	G	H	I
a	1	1	0	0
b	0	1	1	0
c	0	0	1	1

Table 1

What the folk would say about *a*, *b*, and *c*, is that *a* resembles *b, b* resembles *c,* but *a* does not resemble *c*. This seems to be the natural thing to say about these objects and this means that this familiar notion of resemblance is non-transitive. Most of the time, when early Humeans talk about the resemblance of objects, what they intend is just this familiar non-transitive notion of resemblance.

But not always. Sometimes they use "resemblance" to mean what nowadays we would call "the transitive closure of our familiar notion of resemblance", or so the following manuscript indicates:

> That we may understand the full extent of these relations [resemblance, contiguity, and causation], we must consider, that two objects are connected together in the imagination, not only when one is immediately resembling, contiguous to, or the cause of the other, but also when there is interpos'd betwixt them a third object, which bears to both of them any of these relations. This may be carry'd on to a great length; tho' at the same time we may observe, that each remove considerably weakens the relation. (T, I.1.4 §3)

Let "H-resemblance" designate the transitive closure of our familiar relation of resemblance. According to this text, ancestral Humeans seem to be committed to the claim that, if *a* H-resembles *b* and *b* H-resembles *c*, then *a* H-resembles *c*, independently of whether *a* resembles *c* in the familiar sense of "resembles". This is so because *b* is a "third object, which bears to both"

[*a* and *c*] a relation of resemblance. But why did early Humeans need H-resemblance? Why this sudden departure from common usage?

Our conviction is that H-resemblance is a genuine *technical tool* of early Humean culture designed for a purpose, which is to account for "*very general*" or "*very abstract*" ideas: when there is *a* resemblance among objects – when all of them are alike in a common respect – we get a standard abstract idea, one that *connects* its objects in virtue of this resemblance. But when there is a mere H-resemblance among objects we get a *very general* idea that does not so connect its objects, although there may be a general *term* corresponding to it. Here is the textual evidence for this understanding of the technical purpose of H-resemblance in early Humean culture:

> But tho' resemblance be necessary to all philosophical relation, it does not follow, that it always produces a connexion or association of ideas. When a quality becomes very general, and is common to a great many individuals, it leads not the mind directly to any one of them; but by presenting at once too great a choice, does thereby prevent the imagination from fixing on any single object. (T I.1.5 §3)

It seems to us that "resemblance" in this text must be understood as "H-resemblance". For it is only in this sense that it does not "produce a connexion or association of ideas". A similar thought seems to be at work in this later text:

> All ideas, especially abstract ones, are naturally faint and obscure: The mind has but a slender hold of them: They are apt to be confounded with other resembling ideas; and when we have often employed any term, though without a distinct meaning, we are apt to imagine it has a determinate idea, annexed to it. (E, 2 §9)

Here is our interpretation of these texts. According to ancestral Humeans, a "very general" idea is formed whenever, instead of have a single paradigm playing the role of abstract idea, we have several paradigms ("too great a choice") that merely H-resemble each other, in such a way that their H-resemblance does not "produce a connexion or association of ideas" and is such that the "term" associated to it has "no distinct meaning". Arguably, cases in which, according to Humeans, there is *a resemblance* between individuals producing a connexion or association between them and *a meaning* for the annexed general term are cases in which these individuals *are of the same type* or *have something in common*. Accordingly, when a "very general" idea is formed

it is not the case that all the individuals to which it applies have something in common: since the many paradigms merely H-resemble each other, the other objects of which they are paradigms merely exhibit a sort of *network of overlapping and criss-crossing resemblances among them*. This is why the general term attached to a very general idea has no "distinct meaning" and why such an idea does not "produce a connexion or association".

Readers would certainly notice the close similarity between our account of the early Humean concept of "very general idea" and the concept of "family resemblance concept" shaped by late specimens of Homo Wittgensteinus.[26] Indeed, the concept *Game*, which is the family resemblance concept most often found on archaeological sites, can successfully be used as a paradigmatic example of an early Humean "very general idea". Games are such that there is no connexion or association among them, they merely H-resemble each other, exhibiting mere patterns of overlapping and criss-crossing similarities. What the early Humeans add – and in this sense their account is more explanatory than that of Homo Wittgensteinus – is that you get such a pattern in virtue of a "too great choice" of paradigms that merely H-resemble each other. "Family resemblance concept" is a new name for an old idea, one that pertains to the culture of ancestral Humeans.

1.5 Similarity tools at the Age of trickery

Our Humean ancestors admitted three principles of association: similarity, contiguity, and cause. Among these three principles, similarity had a privileged status.[27] Similarity tools play a great variety of crucial roles from the early Humean account of the origin of ideas to their accounts of arguments from experience, the origin of the idea of necessary connection, and the nature of abstract ideas. We hope that by surveying the purposes that similarity tools served in

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[26] Cf. Wittgenstein 2009 §§ 66-7.

[27] See T, 1.1.4 §2: "Tis plain, that in the course of our thinking, and in the constant revolution of our ideas, our imagination runs easily from one idea to any other that *resembles* it, and that this quality alone is to the fancy a sufficient bond and association." See also T, 1.1.5 §3: "1. The first [of those qualities which make objects admit of comparison] is *resemblance*. And this is a relation, without which no philosophical relation can exist; since no objects will admit of comparison, but what have some degree of resemblance."

early Humean culture we have helped to make clear what these tools are. Here we shall offer a more precise taxonomy of the different similarity relations at work in this culture and emphasise some of their features.

There are several dimensions along which relations of similarity can be organised: they can be comparative or non-comparative; overall, minimal, exact or aspectual. Consider first the relation which we introduced when accounting for exceptions to the early Humean thesis that every original idea is a copy of a corresponding impression (Section 1.2). The relevant similarity relation has the following form:

> (**CAS**) *Comparative aspectual similarity:* w is at least as similar to x with respect to r^i as y is similar to z with respect to r^j.

This relation is comparative as it involves a comparative modifier – "as much as", "at least as much as", "more than" or "less than". It is also *aspectual* as it compares similarities in some *respect*. In context, we have seen this relation at work in the early Humean account of how, by observing that two contiguous shades of blue are less similar to each other with respect to hue than any other two contiguous shades of blue are similar to each other with respect to hue, we can acquire an idea of a shade of blue of which we have no impression. In this example, the respects of comparison are identical. But this need not be. Judgments of comparative cross-aspectual similarity are unusual but grammatically just fine: take, for instance, the judgment that Geneva and Paris are more similar with respect to language than Geneva and Zurich are similar with respect to political governance. The relation involved in (CAS) is a *weak* ordering, whereas the relation involved in the thought experiment of the missing shade of blue is *strict*. *Strict aspectual comparative similarity* can be defined in terms of (CAS) in the usual fashion:

> (**Def 1**) w is more similar to x with respect to r^i than y is similar to z with respect to r^j iff w is at least as similar to x with respect to r^i as y is similar to z with respect to r^j and it is not the case that y is at least as similar to z with respect to r^j as w is similar to x with respect to r^i.

Now let us delete the positions for respects of comparison in (CAS). We obtain the following relation of comparative overall similarity:

(COS) *w* is at least as similar to *x* as *y* is similar to *z*.

While comparative aspectual similarity is a six-termed similarity relation, with two positions for *respects*, comparative overall similarity is a four-termed relation of comparative similarity.[28] Comparative overall similarity is topic-neutral: we can compare similarities between objects, events, or properties. In our survey of the roles of similarity tools in early Humean culture, we saw it at work, briefly, in statements of comparative similarity among qualities such as "blue is more similar to green than to scarlet" (See Section 1.4.3).

Now consider (CAS) again and separate the similarities that are compared to focus on one of them. You get a relation of similarity of the following form:

(AS) *x* is similar to *y* with respect to r^i.

This three-termed relation of similarity is non-comparative and aspectual since it has a position for a respect of comparison. It does not play any distinctive role in the early Humean account of cognitive trickery or in their creation myth.

Similarity in some respect comes by degree: two colours can be more or less similar with respect to hue or brightness, two cities can be more or less similar in size or climate. But, of things that are *alike* in some respect, we can say that there is *a* resemblance between them. From now on we will reserve the word "resemblance" for this non-comparative, minimal, relation of similarity that things exhibit when there is *a* resemblance between them in this sense:

(R) *x* resembles *y* iff there is *a* resemblance between *x* and *y* – *i.e.* iff *x* and *y* are alike in some respect r^i.

According to us, the two-termed relation of resemblance defined by (R) is this similarity tool that is at work in the early Humean account of *standard* abstract ideas; more precisely, it is the kind of similarity that holds between the paradigm – whose idea is particular but vicariously general – and other things to which an abstract idea applies. Resemblance is a reflexive, symmetrical, and non-transitive relation of similarity. Its transitive closure is the relation we

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[28] Williamson 1988.

called "H-resemblance", which is the similarity tool at work in the early Humean account of *very* abstract ideas like the idea of a *game* (cf. Section 1.4.3).

Parallel to the minimal notion of resemblance introduced in (R) there is a minimal notion of difference:

> **(D)** *x* differs from *y* iff there is *a* difference between *x* and *y*; iff *x* and *y* are unlike in some respect r^i.

Things can both resemble each other and differ from each other: indeed, everybody resembles his father and differs from him. But, necessarily, if there is no difference between some things, then there is a resemblance between them; and *vice versa*.

Imagine now that, for every respect of comparison r^i between some arbitrary things, say *a* and *b*, *a* exactly resembles *b* with respect to r^i. If so, it is fully accurate to say that *a* is *exactly similar* to *b*. Exact similarity thus understood is a further relation of similarity:

> **(ES)** *x* is exactly similar to *y* iff there is no difference between them.

Exact similarity is two-termed, non-comparative and is an equivalence relation: reflexive, symmetrical, and transitive. Parallel to the notion of exact similarity, there is the notion of exact dissimilarity:

> **(ED)** *x* is exactly dissimilar to *y* iff there is no resemblance between them.

According to (ES) and (D), exact similarity and difference are contradictory notions. According to (ED) and (R), exact dissimilarity and resemblance are contradictory notions. Neither exact similarity nor exact dissimilarity plays any significant role in the fundamental applications of similarity tools in early Humean culture that we surveyed in this chapter.

We noticed earlier that everybody is such that he both resembles and differs from his father. Likewise, everybody is such that he both resembles and differs from his mother, his siblings, uncles and aunts if he has any. This much is trivial. But if Aunt Agatha tells Bertie, with a disapproving tone, that he is like/similar to his uncle George, she means something that isn't trivial. She does not mean to say that Bertie and Lord Yaxley are *exactly* similar since this is

trivially false – no one is exactly similar to any of his uncles. What she means is something *in between* resemblance and exact similarity. Her similarity judgment is what we can call a judgment of (*non-comparative*) *overall similarity*. This relation is what we get when we separate the two similarity relations that are compared in (COS):

(**OS**) *x* is similar overall to *y*.

The relation of overall similarity involved in (OS) is non-comparative and two-termed. Although it is grammatically simple, its satisfaction conditions are more complex than those of resemblance and exact similarity. Whether things are similar overall depends on a *selection* and *weighting* of respects of comparison relative to their salience. Things, ideas, or events are similar overall to each other just if (i) there are enough salient respects in which they are similar and (ii) not too many salient respects in which they are *dissimilar*.

Parallel to overall similarity, there is a notion of overall dissimilarity:

(OD) *x* is dissimilar overall to *y*.

Things, ideas, or events are dissimilar to each other overall just if (i) there are enough salient respects in which they are dissimilar and (ii) not too many salient respects in which there are similar. Overall similarity has the following features: (a) relative to a fixed standard for salience, if some things are similar overall to each other, then these things are not dissimilar overall to each other and *vice versa*; (b) the relevant notion of salience comes by degree; (c) it is possible for some things to be neither similar nor dissimilar overall.

According to us, non-comparative overall similarity (OS) is the most central similarity tool of early Humean culture. It is *this* relation that is involved in the copy-relationship between impression and original idea and in the notion of *regularity* involved in the early Humean accounts of arguments from experience and of our idea of necessary connection. This can be seen by elimination. In these applications of similarity, the relevant notion of similarity is not merely (minimal) resemblance. For being alike in some respect is not sufficient to count as a *copy*, nor is it sufficient to ground the kind of regularity that warrants *forecasting*. But the relevant notion of similarity cannot be *exact* either: no original idea is *exactly* similar to the impression it copies since ideas and impressions differ in *quality* (degree of strength and vividness). Likewise,

it is *usually* not the case that events involved in a regularity (similar *causes*, similar effects) are exactly similar: the sun rose every day of the past year, but never exactly at the same time; Halley's comet appears in the sky every 74-79 years, but not exactly according to the same angle and not always with the same brightness or hue. If events involved in a regularity seem *exactly* similar, this is only the product of an *idealisation*. But idealisation proceeds by a selection of respects of comparison relative to their relevant and salience for prediction in such a way that dissimilarities are regarded as *noise*. Yet such a process of selection is what is going on in judgements of *overall* similarity.

In closing, here is a list of the similarity tools at work at the Age of trickery:

(1) Comparative aspectual similarity – 6-termed relation.

(2) Comparative overall similarity – 4-termed relation.

(3) resemblance – 2-termed relation.

(4) H-resemblance – 2-termed relation.

(5) (Non-comparative) overall similarity – 2-termed relation.

These are the relations of similarity used by early Humeans at the Age of trickery, but these are not the only relations of similarity available: there are also 3-termed relations of similarity like the relation of similarity in some respect.

Some reader may wonder if our Humean ancestors regarded one or the other of the listed relations of similarity as more fundamental or *basic* than the others. If the question of whether some relation of similarity plays more central or important roles than the others, then indeed it seems fair to say that non-comparative overall similarity was, at the Age of trickery, the most fundamental similarity tool. But if the question is whether some notion of similarity is "metaphysically fundamental" and somehow *metaphysically grounds* the others, then the right answer, it seems to us, is that our Humean ancestors were agnostic about this issue.[29] In general, early Humeans did not care about whether their primitives were "metaphysically fundamental". Why should they? They made tools of similarity relations for the same reason as primitive tribes made tools of stones: because they were available, in great quantity, familiar, and such that what we can do with them is well-understood. These are the features of a resource that matter when you wonder about using it; metaphysical fundamentality is not one of them.

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[29] Consider by analogy what Hume says about the principle *Custom*; cf. Section 1.2 and E, 5.1 §5.

But suppose for the sake of the argument that which similarity relation is metaphysically fundamental and which is metaphysically grounded matters. Which criterion could be used to decide this matter? There is one plausible criterion I can think of according to which metaphysical fundamentality would be a function of *determinacy*. The truth conditions of similarity statements seem to differ in *indeterminacy*. Thus the statement that *blue* is more similar to *green* than to *scarlet* seems determinately and objectively true. If so, the statement that a blue thing is more similar to a green thing than to a red thing with respect to colour is determinately and objectively true. But the truth value of the statement that a blue and a green thing are more similar to each other with respect to colour than a square and a rectangle thing are similar to each other with respect to shape does not seem to be equally determinate: this is so because we have no fixed rule for comparing colours and shapes. It seems less indeterminate whether something (minimally) resembles something else. Still, even statements of minimal resemblance can be indeterminate to the extent that it is sometimes indeterminate whether some things are alike in some respect. Is an Oxford blue book cover and a Prussian blue blanket alike in colour? Sometimes, I want to say "yes", sometimes I want to say "no": it depends if I use them for an artistic installation or if I consider them with no particular purpose in mind. Things get worse with statements of overall similarity between things or events, in which similarities and dissimilarities in various respects are selected and weighted relative to their relevance and salience.[30]

Arguably, the relative indeterminacy of the truth value of a similarity statement is relative to how much pragmatic issues about how *we* – or any other cognizer – *represent* its relata – our environment, our age, our linguistic abilities, our interests, and purposes – matter for its truth. If so, one could say that the less indeterminate a kind of similarity statement is the more independent of our representation it is and, therefore, the more metaphysically fundamental it is. According to this way of measuring the "metaphysical fundamentality" of a kind of similarity statement, overall similarity statements between *objects* or events score very low, whereas exact similarity score very high.

It seems to us that there is something arbitrary in the decision of measuring metaphysical fundamentality in this way. What is more important: it does not help answering the question of which relation of similarity was more metaphysically fundamental, according to our Humean

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[30] For an extensive survey of empirical data regarding the indeterminacy of overall similarity, see Medin, Goldstone, & Gentner 1993. See also Goodman 1970, Lewis 1973: 91-95 and Lewis 1983a.

ancestors. This is so because there is no evidence that our Humean ancestors took *any* relation of similarity as indeterminate. On the contrary, it seems that, for them, any similarity relation is such that it is an objectively determinate fact whether entities stand in this relation or not. Thus our Humean ancestors seem to be committed to a doctrine about any kind of similarity that has been called *Resemblism*:[31]

> **Resemblism:** There is a determinate fact of the matter about the similarity of entities irrelative to how we or any other cognizers *contextually represent* these entities.

If our Humean ancestors were – as it seems – committed to the objective determinacy of their similarity tools, then there is a *tension* between their naïve commitment to Resemblism and their belief that their similarity tools were familiar notions of similarity. This tension follows from the fact that there is plenty of empirical evidence that these notions of similarity we are familiar with, the ones we use in the streets, are indeterminate.

This tension can be turned into a trade-off for *any* user of similarity tools:

(i) If what matters to you is to use *familiar* similarity relations as tools, then, what you will gain in familiarity, you will lose in determinacy: the applications of your tools will involve some amount of indeterminacy derived from the indeterminacy of your similarity tools.

(ii) If what matters to you is to use determinate relations of similarity as tools, then what you will gain in determinacy, you will lose in familiarity: as your similarity tools will be more technical and artificial, so will be your applications of them.

This trade-off between the determinacy and the familiarity of similarity tools is of great importance for this book's purpose because it is the leitmotiv of the historical evolution of similarity toolmaking after the Age of trickery.

The Age of trickery was followed by the two Ages of the builders, which marks a great division among Humean tribes. One group of builders were more attached to the determinacy of similarity tools than to their familiarity. The golden age of their applications of similarity tools is known as the Age of *heavy* construction, a time when similarity tools were used for the

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[31] Cf. Guigon 2014.

construction of solid, analytic cathedrals – "*logische Aufbauen*" and their cognates. A second group of builders were more attached to familiarity than determinacy. The golden age of their applications of similarity tools is known in history books as the Age of *light* construction, a time when similarity tools were mostly used for the construction of flexible buildings, adapted to contextual pragmatic pressure.

In our history books, the Age of heavy construction precedes the Age of light construction. We will follow the historical order of events.

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