

Kant's Mathematical Sublime and the Role of the Infinite: Reply to Crowther

SIMON D. SMITH

University College London

Email: uctysds@live.ucl.ac.uk

Abstract

This paper offers an analysis of Kant's account of the mathematical sublime with reference to his claim that 'Nature is thus sublime in those of its appearances the intuition of which brings with them the idea of its infinity' (*CJ*, 5: 255). In undertaking this analysis I challenge Paul Crowther's interpretation of this species of aesthetic experience, and I reject his interpretation as not being reflective of Kant's actual position. I go on to show that the experience of the mathematical sublime is necessarily connected with the progression of the imagination in its move towards the infinite.

Keywords: mathematical sublime, estimation of magnitude, progression of the imagination, the infinite

Central to Kant's account of the mathematical sublime, as it is presented within the *Critique of the Power of Judgement*, is the importance of the role of the infinite, or our experiencing a sense of the infinite, in determining this kind of aesthetic response. Precisely how the experience of the infinite is connected with our experience of the mathematical sublime is however unclear, and what one prominent commentator on Kant's account of the sublime (Paul Crowther) has found most susceptible to doubt. Although this scepticism with regard to the importance of the role of the infinite in determining our aesthetic response to the mathematical sublime has been challenged, with various authors responding to Crowther's account, there nevertheless remains an uncertainty in exactly how the mathematical sublime is importantly connected with an experience of the infinite. The issue here is especially concerned with the importance (or unimportance) of infinity as a measure against which phenomenal magnitudes are compared. In this paper I will argue that our experiencing

a sense of the infinite as an absolute measure is essential in accounting for the ‘movement of the mind’ (*CJ*, 5: 247)¹ that is requisite for an experience of the mathematical sublime. I will argue that the key to understanding this necessary relation between the infinite and the sublime is to be found in Kant’s account of the imagination and the progression of time as it is presented both within his discussion of the mathematical sublime itself and within the *Critique of Pure Reason*.

The Sublime as Aesthetic Response

Peculiar to Kant’s overall aesthetic theory as it is presented within the third *Critique* is his argument that for an aesthetic judgement to be possible (whether a judgement on the beautiful, the sublime or art) there must, through the intuitive perceptual content that is the source of our response, be an intuition-based purposiveness for a certain *cognitive faculty*. This purposiveness is not a purposiveness for any *particular* (determinate) aspect of cognition, but just the embodiment of purposiveness as such, or what Kant calls ‘merely a subjective formal purposiveness’ (*CJ*, 5: 190). The peculiarity of the aesthetic judgement of beauty is that, even though the perception of the object possesses a determinate conceptual content (and thus has a cognitive/conceptual component), it is the relation of this intuition to the *faculty of the concepts of the understanding* that determines the particular character of our aesthetic response or reaction, and not to its being brought under any particular concept. This purposiveness of the faculty of intuitions for the faculty of concepts as such is a *felt* purposiveness, which is just to say that what is characteristic of aesthetic judgement is its *non-cognitive* character, despite a certain sort of *relatedness* to our cognitive faculty.

The experience of the sublime, like the experience of beauty, also has a relatedness to concepts, where this plays an essential role in determining the particular aesthetic character of such judgements. With the opening of the Analytic of the Sublime Kant highlights the similarities between these two kinds of aesthetic response:

The beautiful coincides with the sublime in that both please for themselves. And further in that both presuppose neither a judgment of sense nor a logically determining judgment, but a judgment of reflection: consequently the satisfaction does not depend on a sensation, like that in the agreeable, nor on a determinate concept, like the satisfaction in the good; but it is nevertheless still related to concepts, although it is indeterminate which, hence the satisfaction is connected to the mere presentation or to

the faculty for that, through which the faculty of presentation of the imagination is considered, in the case of a given intuition, to be in accord with the *faculty of concepts* of the understanding or of reason, as promoting the latter. (*CJ*, 5: 244)

It is apparent here that it is a purposiveness for the faculty of concepts as such that, as in the case of the beautiful, determines the nature of our response to the sublime. We also learn that there are two different ways in which this purposiveness for concepts can be operative: either the intuition is purposive for the faculty of concepts of the *understanding*, or for the faculty of concepts ('ideas') of *reason*. With judgements of beauty, as we have noted, it is the purposiveness of the intuition for the faculty of concepts of the understanding that determines our response. Here the imagination is engaged with an object the form of which is amenable, or purposive for, the organizational function of the understanding (as that which is capable of bringing a more determinate content to our representations). With the sublime, however, there is quite a different cognitive story to be told, insofar as here the intuition is purposive for the concepts of *reason* rather than the understanding. What is peculiar about this relation however, is that the intuition is purposive for reason insofar as it is *counter-purposive* for the understanding, and this marks what Kant calls 'the most important and intrinsic difference between the sublime and the beautiful' (*CJ*, 5: 243).

Kant's account of the sublime, however, has a complexity that his account of the beautiful does not, insofar as Kant distinguishes between two experiences of the sublime: the mathematical sublime and the dynamical sublime. The main difference here is that the former is concerned with vast *magnitude* whereas the latter is concerned with vast *power* in nature. In the general definition of the sublime that opens the *Analytic of the Sublime*, Kant argues that the counter-purposiveness with regard to the faculty of the understanding has its origins in what is essentially the *formlessness* of objects in nature.² Thus vast objects whose magnitude we cannot comprehend are said to be formless insofar as they cannot be easily taken up as single unified representations, and in this sense overwhelm the imaginative function. It is apparent however that this general account of the sublime seems to accord principally with what Kant calls the mathematical sublime, insofar as this aspect of the sublime is concerned with a magnitude that is too large for presentation as a singularly comprehended intuition.³ It is in fact this aspect of the sublime that is the most complex in Kant's analysis, where the role of the infinite with regard to the comprehension of vast magnitude is uncertain, leading to diverse and conflicting commentaries within the secondary literature.

The Mathematical Sublime

Kant opens his discussion of the mathematical sublime with a distinction between our simply saying that something is great, i.e. great without qualification, and saying that something is absolutely great (what Kant calls 'sublime'). With the former kind of judgement, Kant argues that it is made without reference to any objective standard, but solely with reference to a subjective one. Although Kant isn't very clear as to what this amounts to, it seems that with this kind of judgement there is not some determinate standard or set before us (such as horses of particular sizes) against which we judge, for example, the greatness of a particular horse, but that there is some standard in our mind such as the general average size of a horse against which we make our judgement. Consequently there is not some definite conceptual measure in mind when we make such a judgement, and in this sense Kant refers to this estimate as an 'aesthetic' one, which subsequently serves as a ground of universal communicability (*CJ*, 5: 249). By contrast, in saying that something is absolutely great, i.e. great beyond all comparison (sublime) we make a judgement that presupposes no standard outside of it, but must be sought entirely within itself. With reference to objects in nature (because, as physically limited items, they can always be compared to something greater), it is clear that they belong to the first kind of judging, so that something's being simply great, or small, is always referred to a subjective standard. If the sublime on the other hand is that which is absolutely great, then it is not to be found in natural objects, so that, for Kant, it is only through *ideas of reason*, insofar as such ideas do not presuppose any standard outside of them, that something can be called absolutely great, i.e. sublime (*CJ*, 5: 250).

The role of the aesthetic, understood as the sensory, intuitively determining aspect of measurement, is important to the next stage in Kant's analysis of the sublime, and here Kant remarks upon the primacy and significance of the aesthetic with reference to mathematical estimation or measurement. Kant initially argues, however, that when presented with any vastly great object there are two ways in which we can estimate its magnitude. Either we can obtain a determinate measure through the use of mathematical concepts, or we can make an estimation aesthetically, by eye as it were, judging by how many units one thing would fit into another (*CJ*, 5: 251). Although these are two different ways of measuring magnitude, Kant highlights the primacy of the aesthetic in all estimation or measurement, for he argues that with mathematical estimation we make use of units, and define units by other units, and that any unit can only have sense for us, as a measure, insofar as we can grasp it aesthetically. There would be no sense in our estimating something to be

10 feet long if we did not know intuitively, by eye, how long a foot was, or if needed the initial measures that make up a foot. Kant's whole point here is to draw a fundamental distinction between aesthetic and mathematical estimation in order to highlight that the key determinant of the mathematical sublime is the failure of our ability to grasp, aesthetically, vast magnitudes; and this leads to an important further distinction between the activities involved in taking up a quantum into the imagination:

To take up a quantum in the imagination intuitively, in order to be able to use it as a measure or a unit for the estimation of magnitude by means of numbers, involves two actions of this faculty: *apprehension* (*apprehensio*) and *comprehension* (*comprehensio aesthetica*). There is no difficulty with apprehension, because it can go on to infinity; but comprehension becomes ever more difficult the further apprehension advances, and soon reaches its maximum, namely the aesthetically greatest basic measure for the estimation of magnitude. (*CJ*, 5: 251–2)

Comprehension becomes more difficult when, in surveying a great object or vista, what we have apprehended falls out of view as we proceed to take up more of the object aesthetically, so that our comprehension 'loses on one side as much as it gains on the other, and there is in the comprehension a greatest point beyond which it cannot go' (*CJ*, 5: 252). This greatest point is the greatest possible measure that we are capable of using as an aesthetic measure for any comparative estimation of magnitude. The feeling of the sublime becomes felt when this greatest point in the experience of the object is either reached or surpassed.

Exactly how this response is triggered, however, is somewhat ambiguous in Kant's account, insofar as Kant appears to allow for two kinds of overwhelming aesthetic experience (both a failed comprehension and a successful comprehension that nevertheless strains this faculty to the limit) as causing our response. Thus in the examples that follow the passage just quoted, Kant refers to an experience of the sublime that is felt through entering St Peter's in Rome. Here the sheer vastness of the internal space overwhelms the imagination's attempt at comprehension, whereby the imagination 'reaches its maximum and, in the effort to extend it, sinks back into itself, but is thereby transported into an emotionally moving satisfaction' (*CJ*, 5: 252). What is peculiar here is that this example contrasts with the one immediately before it, in the sense that the previous example locates the optimal emotional experience in the *successful*, rather than failed, comprehension in one intuition, and Kant

refers to Nicolas Savary's observation in his report on Egypt that, 'in order to get the full emotional effect of the magnitude of the pyramids one must neither come too close to them nor be too far away' (*CJ*, 5: 252). Here then is an ambiguity in precisely what sense the sublime is triggered in the experience of vast magnitude, and whether it can be triggered not only by failed comprehension, but also successful comprehension that nevertheless pushes the limits of what can be taken up in a single act.

The Superfluity of the Infinite – Crowther

If there is an ambiguity or difficulty with this stage in Kant's argument, however, there is an even greater one when it comes to clarifying the relevance of the infinite in our experience of the sublime, and the problem here is with the exact role Kant assigns the infinite in determining the nature of this aesthetic experience.

Paul Crowther is one of the main commentators on Kant's discussion of the sublime and he is critical of Kant's account, or what he sees as Kant's account, of the role of infinity in our experience of the sublime. In his book *The Kantian Sublime* (1989) and in his later book *The Kantian Aesthetic* (2010) Crowther argues that Kant is actually operating with two differing and conflicting lines of argument in his account of the mathematical sublime. There is both what Crowther calls a *baroque* line of argument, and an *austere* line of argument, and he sees Kant as running both arguments together, thereby leading to the confusion and complexity of the discussion of the mathematical sublime. Crowther further argues that when it comes to an intelligible and plausible philosophical position it is only the austere approach that is really viable.

For Crowther the baroque line of argument sees Kant as arguing that when faced with an object of vast magnitude we are somehow prompted to appeal to infinity as an absolute measure against which the phenomenal object is compared, and that when we try to imaginatively generate this absolute measure as an intuition (as a demand of reason) we find our imagination overwhelmed. Because of this imaginative failure to satisfy a demand of reason, we experience a sense of failure, or humiliation. The redeeming aspect of this inadequacy, however, is that our initial feeling of displeasure gives way to a feeling of pleasure, and this is just insofar as we recognize that there is a superior faculty of reason that can transcend, through its ideas, what is sensibly conditioned and limited. In addition, this perceived transcendence of reason accords with our rational moral vocation whereby our moral (noumenal) selves must overcome the limitations of our phenomenal existence (Crowther 1989: 100).⁴ The austere

approach, on the other hand, does not appeal to any of the architectonics of infinity as a measure, as prompted by an experience of the vast, but just locates the feeling of displeasure in our imaginative inability to comprehend a vast object in one intuition. The feeling of pleasure instead is located in the fact that reason 'requires totality for all given magnitudes' (*CJ*, 5: 254) and that, although we cannot grasp such a totality in intuition, we nevertheless possess the *idea* of such a totality. The pleasure is in recognizing that we possess a faculty of reason, where through its ideas we are able to transcend (or overcome) what is sensibly (phenomenally) conditioned. On this line of argument infinity as a measure is not operative, so that 'there is no reason why infinity should play any necessary role in the experience of the sublime' (Crowther 2010: 179).⁵

This austere line of argument, as Crowther presents it, does have a neatness that complements Kant's more straightforward account of the dynamical sublime, as well as offering an intuitively plausible account that might appear to match our phenomenological experience of standing before a vast magnitude (where a feeling for infinity might not be obvious or felt as necessary). However, it is doubtful whether the baroque thesis as Crowther presents it is in fact the way Kant presents his argument, and thereby really captures the role that Kant assigns to the infinite.

Integral to Crowther's reading of Kant's baroque thesis is a specific understanding of the role of infinity as a measure against which the vast phenomenal item is judged. This reading of the role of the infinite ultimately shapes Crowther's whole interpretation and his promotion of an austere reading, and it is this feature of Crowther's argument that I consider flawed. Although Crowther is right in seeing the importance for Kant of the role of infinity as a measure, the trouble is that he sees Kant as offering a somewhat peculiar account of this: he sees Kant as arguing that when we are driven to recognize infinity as an absolute measure, we are using this measure as a measure against which the vast phenomenal object is compared. Regarding how this procedure works Crowther writes,

Now, of course, in judging magnitude one can do so either by calculating how many times the relevant unit of measure will fit into the object measured, or by taking a measure which is greater than the measured item and judging how many times the item would fit into it. Kant assumes (without explanation) that it is the latter strategy which holds in the case of vast phenomena. (Crowther 2010: 176)

In being faced with vast phenomena we try to attain an estimation of their magnitude through reference to something larger than the phenomena themselves, as a measure for comparison. This leads to a further procedure:

As I interpret him here [*CJ*, 5: 254], Kant is saying that in the case of vast formless objects reason demands that we estimate their magnitude in relation to a unit of measure provided by a single intuition. In order to satisfy this demand the imagination will at first try out easily comprehended measures such as a foot or a perch, but is then driven to find larger units as a measure for them, and then still larger units as a measure for these, and so on and so on, until it arrives at infinity itself as the only appropriate measure. (Crowther 1989: 97)

The idea of infinity, as a whole, is arrived at because it is the only possible measure that could be used as a standard against which something that pushes the faculty of comprehension to its limits can be compared.

The reason this account of the role of the infinite is so peculiar is, as Crowther points out, that it appears philosophically superfluous, phenomenologically speaking, in the sense that there appears to be no introspective accord between the explanation here offered and the relatively instant experience of the sublime when encountered. Further, it also seems bizarre to postulate that we try to arrive at a measure of the infinite as an intuitive whole against which other unities, or measures, are compared, which in itself is impossible (infinity being only approachable as an idea). There would be no way of seeing how many times a vast phenomenal object could fit into something that is itself unbounded.

The trouble with this account, however, does not reflect a confusion on Kant's behalf (whereby he is straining to find a role for the infinite for architectonic reasons⁶) but rather a misinterpretation on Crowther's part. This misreading can be detected at various points in Crowther's commentary. For instance the passage at *CJ*, 5: 254, that Crowther sees as indicative of an account whereby we are driven to an aesthetic estimation of ever increasing measures until we reach infinity as the only possible measure, is not reflective of Kant's text. In this section Kant is discussing what he calls the logical, or mathematical, estimation of magnitude, which is an estimation guided by numerical concepts. Here the scope for arithmetic estimation is unlimited, and can proceed indefinitely, and in this sense 'In this mathematical estimation of magnitude the understanding is equally well served and satisfied whether the

imagination chooses for its unit a magnitude that can be grasped in a single glance, e.g., a foot or a rod, or whether it chooses a German mile or even a diameter of the earth' (*CJ*, 5: 254). Kant's overall point here is that this kind of mathematical estimation contrasts with aesthetic estimation or presentation, as in the latter case there is a limit to what can be comprehended in imagination. Kant is not here outlining a procedure for how we comprehend the phenomenally vast with reference to smaller or larger units through comparison.

Further indicative of Crowther's misreading (and which we highlight to make perspicuous our own account by contrast) is where he reads the passage immediately prior to the one which sets up the distinction between apprehension and comprehension (*CJ*, 5: 251–2) as reflective of his baroque account. Here Kant writes:

Now for the mathematical estimation of magnitude there is, to be sure, no greatest (for the power of numbers goes on to infinity); but for the aesthetic estimation of magnitude there certainly is a greatest; and about this I say that if it is judged as an absolute measure, beyond which no greater is subjectively (for the judging subject) possible, it brings with it the idea of the sublime. (*CJ*, 5: 251)

Crowther reads Kant here as arguing that in being faced with the phenomenally vast we are driven towards the attainment of an absolute measure for determining magnitude, where this measure is infinity comprehended (1989: 94–6). This interpretation is not correct, however, and the confusion comes from the fact that Crowther reads Kant's reference (in the above passage) to an absolute measure, 'beyond which no greater is subjectively possible', as being just a reference to the attempt to grasp infinity intuitively as an absolute whole. Because of this identification he sees this passage as just an initial account of Kant's later (*CJ*, 5: 255) explicit identification of the 'unalterable basic measure of nature [as an] absolute whole' with 'infinity comprehended'. However, Kant's reference to an absolute measure at *CJ*, 5: 251, is the same as the reference to it which occurs slightly after, which we have already discussed, where Kant refers to the 'greatest point' or 'maximum' beyond which we cannot go in reaching the limit of what can be taken up in comprehension. Reaching this 'maximum' was just reaching 'the aesthetically greatest basic measure for the estimation of magnitude' (*CJ*, 5: 252), and this was not the effort to grasp infinity as a whole, but just reaching the limit of what can in comprehension be used as an aesthetic measure for a further

comparison through units. At this earlier stage of Kant's argument it is this limit that somehow 'brings with it the idea the sublime', and Kant is not here identifying this limit with grasping infinity as an intuitive whole for use as a measure.

So although there are difficulties and complexities in Kant's text that might make it appear that at the earlier stages of his argument he is referring to infinity as a measure against which we are to judge phenomenal objects (baroque thesis), he is in fact not, so that contrary to what Crowther maintains, Kant nowhere actually argues that we attempt to measure the intuition against infinity as a unit that would fit into it so many times. What *is* clear, however, is that the maximally comprehensible intuitive perceptual intake is also the maximum aesthetic measure (for further comparison through units), insofar as none greater can be comprehended, and it is this measure that brings with it the idea of the sublime insofar as it has pushed the imagination to its limits. What is also clear from Kant's account, however, is that infinity as a supreme measure *is* supposed to play an important role in determining our aesthetic response; just as it is apparent that the sensible object is involved in somehow triggering the experience of the infinite. Thus after arguing that the infinite is only possible as an idea of reason, Kant tells us that 'Nature is thus sublime in those of its appearances the intuition of which brings with them the idea of its infinity', and that 'the latter cannot happen except through the inadequacy of even the greatest effort of our imagination in the estimation of the magnitude of the object' (*CJ*, 5: 255). The closeness of the relation between our experience of the sublime and the experience of the infinite is here apparent, as it is only insofar as an object invokes the idea of infinity that the sublime is experienced. It is just that this relation is to be accounted for differently than the way Crowther accounts for it.

Patricia Matthews's Response to Crowther

The importance of the role of the infinite in determining the aesthetic response of the mathematical sublime is reflected in a marked resistance to Crowther's arguments, and certain writers have appealed to the importance of infinity in their reading of the mathematical sublime just as they have been dismissive of Crowther's recommendation for an austere interpretation. Patricia Matthews for instance argues that the infinite is invoked just because an object *seems* to be infinite when it cannot be taken up in a single act of comprehension:

When Kant speaks of using imagination to comprehend the infinite, he is speaking of the infinite as the object in nature that

we are trying to measure. From a subjective point of view, this object *seems* infinite. We are not trying to measure the infinite independently of the object in nature. There is not one view according to which imagination attempts to comprehend the infinite as a whole and use it as a measure in estimating the object (the baroque thesis), and another view according to which the imagination attempts to comprehend the object as a whole (the austere thesis). Further, the reference to reason's idea of the infinite is not gratuitous, but is implied when the object that imagination tries to grasp as a whole seems infinite. (Matthews 1996: 173)

For Matthews the idea of infinity is prompted when, as far as we can tell, the phenomenal object seems to go on forever, as unbounded. Because this notion strains the imagination in an attempt to represent it as an aesthetic measure, we experience a sense of displeasure. But we experience a pleasure when we nevertheless recognize that we possess the *idea* of the infinite, and thereby through reason partake of the supersensible as well as the sensible realm. On this account there is no postulating of the idea that we search out the infinite as a measure against which we compare the phenomenal object (the baroque thesis), yet the infinite is assigned a key role insofar as through the object it triggers the experience of the sublime.

The merit of Matthews's account is that it appears to be closer to Kant's actual text, insofar as it recognizes the importance of his contention that nature is sublime in those of its appearances which bring with them the idea of its infinity. The infinite on this account does not look to be a strained additive inserted for both architectonic and historical reasons, but a more intuitive feature of what we do experience in incomprehensible vastness, namely its never-endingness.

Nevertheless, there remains something unsatisfactory about the idea that phenomenal vastness *seems* to be infinite, for as Crowther points out in response to Matthews,

a phenomenon can surely be experienced as *overwhelming* per se without appearing to be infinite. Indeed, if one person insists that the infinite must be involved, then another, with equal validity, can claim that this is not the case, in so far as they can find no introspective evidence that it figures in their own experience of the sublime. (Crowther 2010: 181n.)

Crowther's argument here seems to be valid, insofar as we might very well see the totality before us and the fact that it is bounded (finite), even though it strains our faculty of comprehension to the limit. Likewise, we might be conceptually aware that the object is finite even though we are unable to comprehend it, so that it would seem difficult to say that the object seems to be infinite when we know it is not. Matthews's argument does not seem to get the role of the infinite quite right, and this is because her location of the role of the infinite is not correctly placed, located as it is within a phenomenal seeming that might not actually seem.⁷ If on the other hand we can locate the move towards infinity as a theoretically necessary component of our engagement with the phenomenally vast in nature, then even if it is not pervasively obvious (phenomenologically speaking) that the infinite is a determinant in an experience of the sublime, we will have an argument for grounding its role in determining this response.⁸ On this account we will not be open to the shortcomings of Matthews's argument.

The Progression of the Imagination

Important to our argument here is Kant's account of intuition and the imagination as presented both within his account of the mathematical sublime and the Transcendental Aesthetic of the first *Critique*. Within the former a key passage is to be found in the second section of §26, where the role of infinity in the experience of the sublime comes more to the fore. This is where Kant states that

The imagination, by itself, without anything hindering it, advances to infinity in the comprehension that is requisite for the representation of magnitude; the understanding however, guides this by numerical concepts, for which the former must provide the schema. (*CJ*, 5: 253)

Kant does not tell us why the imagination, 'without anything hindering it, advances to infinity'; this is presented just as a fact about the imagination. We have seen however that the triggering of an experience of the mathematical sublime is connected with an inability on the part of the imagination to comprehend the magnitude that is before it. But we have also seen that a failure here nevertheless prompts a further movement on the part of the imagination. This further movement was just a being 'transported to an emotionally moving satisfaction' (*CJ*, 5: 252), but we will now see that this is connected with the imagination's ability to move towards infinity in its progression, despite an initial sinking back into itself. The importance of this operation of the imagination is overlooked.

However, it is essential to understanding why the experience of infinity is necessarily connected with determining our response to the mathematical sublime.

Important to this account is considering the function of inner sense as it presented within the *Critique of Pure Reason*, as this helps us to understand why the imagination if left to itself would proceed to infinity. The Transcendental Aesthetic is especially important here, as here we learn that time (inner sense) is directional and proceeds in accordance with the analogy of drawing a line, which if it were to represent time most accurately would be never-ending:

Time is nothing other than the form of inner sense ... For time cannot be a determination of outer appearances; it belongs neither to shape or a position, etc., but on the contrary determines the relation of representations in our inner state. And just because this inner intuition yields no shape we also attempt to remedy this lack through analogies, and represent the temporal sequence through a line progressing to infinity, in which the manifold constitutes a series that is of only one dimension, and infer from the properties of this line to all the properties of time, with the sole difference that the parts of the former are simultaneous but those of latter always exist successively. (CPR, A33/B49–50)

Because time is a precondition of intuitive synthesis, it is bound up with the function of the imagination, as that whose 'aim in regard to all the manifold of appearance is nothing further than the necessary unity in their synthesis' (CPR, A123). The only way time, as that which 'yields no shape', can take an analogical representational form (as a line) is through an imaginative function. Because inner sense is the basis of intuition as such then it is not surprising that the imagination in its synthesizing function would, if unchecked, proceed indefinitely.⁹ The imagination being 'unchecked' contrasts with its being checked in the estimation of magnitude (our comprehending what is before us), and Kant's reference to the operation of the understanding as that which 'guides by numerical concepts' highlights what is characteristic of grasping a measure in apprehension, where 'there is certainly something objectively purposive in accordance with the concept of an end (such as all measuring is), but nothing that is purposive and pleasing for the aesthetic power of judgment' (CJ, 5: 253). Here (as mentioned earlier) mathematical estimation can proceed indefinitely, and given any particular measure,

from one that can be taken up in a single intuition (such as a foot) and one that cannot (such as the ‘diameter of the earth’, *CJ*, 5: 254), we can continue to proceed unhindered *in apprehension* (logical but not aesthetic comprehension) to infinity.

In order for there to be an experience that is ‘pleasing for the aesthetic power of judgment’, however, there must initially be something restrictive, which is just the limit of our power of comprehension. The failure to comprehend is importantly connected with the imagination running on to infinity, and we can begin to see that this is because this faculty has lost its restrictions in that it is no longer bound to a determinate magnitude. However, our minds are not of the kind that is satisfied with infinite progression, where due to the nature of this progression there would be no closed series and thus no unified totality. Here the importance of the role of reason comes into play, as that which

requires totality for all given magnitudes, even for those that can never be entirely apprehended although they are (in the sensible representation) judged as entirely given, hence comprehension in *one* intuition, and it demands a *presentation* for all members of a progressively increasing numerical series, and does not exempt from this requirement even the infinite (space and past time), but rather makes it unavoidable for us to think of it (in the judgment of common reason) as *given entirely* (in its totality). (*CJ*, 5: 254)

The paragraph following this harks back to the discussion that opened Kant’s treatment of the sublime regarding the role of an absolute measure in comparison with which everything (in nature) is small, and we subsequently learn that our grasping of infinity as a totality is connected with its role as a measure. Regarding this Kant writes: ‘Now the proper unalterable basic measure of nature in its absolute whole, which in the case of nature as appearance, is infinity comprehended’ (*CJ*, 5: 255). Of course the notion of grasping the infinite intuitively as a whole is impossible (what Kant calls a ‘self-contradictory concept’), as this would require a determinate measure, which can never be given. For Kant however it is ‘*even to be able to think* the given infinite without contradiction’ that is of special significance here, for this ‘requires a faculty in the human mind that is itself supersensible’ (*CJ*, 5: 254). The only way in which we can coherently think of the infinite as a whole, given that we cannot think of it as a mathematically unified concept, is as the substratum of the phenomenal world. This substratum must of course be

located in a noumenal realm, and in this sense infinity is comprehended as a 'pure intellectual estimation of magnitude *under* a concept' (*CJ*, 5: 254) (i.e. the concept of a supersensible substrate or base of the phenomenal realm), and is thus made more determinate.

If then it is a necessary feature of the imagination to run on to infinity unchecked, then insofar as we are experiencing something that pushes the faculty of comprehension to the limit (is overwhelmingly vast) and which does not limit the intuition aesthetically, there is a sense in which the imagination is unhindered in its negotiation of the object. If the intuition were negotiable within definite limits (capable of being taken up in a single intuition) there would clearly be no need for the imagination to advance beyond its comprehension, but because it is indefinite in its limitations the imagination runs onwards towards infinity. Infinity however cannot be aesthetically grasped through the imagination and so reason comes into play in order to complete the desired totality as idea. On this account the *displeasure* arises from the 'inadequacy of the imagination in the aesthetic estimation of magnitude' (*CJ*, 5: 257), whereas the *pleasure* arises from being able to grasp (as an idea of reason) the infinite as the supreme measure of magnitude, so that

Just because there is in our imagination a striving to advance to the infinite, while in our reason there lies a claim to absolute totality, as to a real idea, the very inadequacy of our faculty for estimating the magnitude of the things of the sensible world awakens the feeling of a supersensible faculty in us. (*CJ*, 5: 250)

On this account it needn't be maintained that the object actually *seems* to be infinite (Matthews), but just that the object is not limited by an act of comprehension, so that it prompts or triggers an experience of the imagination's running on to infinity. (We do not thereby say that the *object* as such appears to be infinite, but that the experience of infinity is triggered through the object's vastness, or limitlessness.¹⁰)

In support of this argument are Kant's remarks towards the end of the section on the mathematical sublime, where he further elaborates upon the differences between apprehension and comprehension with reference to the difference between a temporal and an instantaneous synthesis of spatiality. These remarks are important in that they make reference to the function of inner sense in the measurement of space, which we have

argued is important in making sense of Kant's contention that the imagination proceeds unchecked to infinity. Here Kant writes:

The measurement of a space (as apprehension) is at the same time the description of it, thus an objective movement in the imagination and a progression; by contrast, the comprehension of multiplicity in the unity not of thought but of intuition, hence the comprehension in one moment of that which is successfully apprehended, is a regression, which in turn cancels the time-condition in the progression of the imagination and makes *simultaneity* intuitable. (*CJ*, 5: 258–9)

The taking up 'in one moment', i.e. in an instant, of an intuition does what Kant calls 'violence' to the faculty of inner sense, insofar as this latter faculty proceeds successively (in accordance with the analogy of linear progression). With the overwhelmingly vast, however, we are unable to take up the intuition 'in one moment' (simultaneously), so that the imagination as temporally progressive does not find the 'time condition' to be cancelled, but finds it instead to be opened, insofar as there are no bounds to limit or check its movement. Thus although in engaging with everyday objects we put a check upon inner sense every time we successfully comprehend (take up in one moment) an object, with the overwhelmingly vast we free up this faculty so that it will advance towards infinity, in turn bringing about the experience of the sublime.¹¹ As we have seen, however, because we possess reason, our mind 'requires totality for all given magnitudes' (*CJ*, 5: 254), so that even though there is an open-ended infinite progression in the synthesis of time, reason demands that even this movement towards the infinite be grasped as a totality, so that the positing of a supersensible substrate (infinity as an absolute totality) is necessitated.

So contrary to Crowther we do not read Kant as arguing that the importance of the role of infinity is in its being used (or failing to be used) as a measure against which phenomenal items are judged. It is rather that the experience of infinity (as idea) is stimulated through the experience of unbounded phenomena, and that because reason demands totality in the presentation of magnitude, the idea of infinity as a whole (an absolute measure – noumenal substrate) is generated, thus showing that we are at least able to think of infinity as a whole even if we cannot grasp such an idea aesthetically. The infinite here cannot be a measure that is used for the comparison of phenomenal items, since the only way that the infinite can operate as a measure is in an absolute sense, so that it is through

comparison with this idea that everything else (all phenomena) is small. It must (for Kant) be taken for granted that in some tacit sense we hold the phenomenal magnitude up against the infinite by way of comparison, but the consequence of this is a feeling of the smallness of things in comparison with infinitude. It is in this sense that Kant writes:

it is a law (of reason) for us and part of our vocation to estimate everything great that nature contains as an object of the senses for us as small in comparison with ideas of reason; and whatever arouses the feeling of this supersensible vocation in us is in agreement with that law. (*CJ*, 5: 258)

The ramifications of our estimation of phenomenal magnitude thus have important consequences for an awareness, or bringing to mind, of our moral vocation.¹² It is in *this* sense that infinity as a measure is importantly connected with the pleasure and the phenomenology of aesthetic response, and not in its being used, or failing to be used, as a sensible measure against which we can compare a phenomenal item.

Conclusion

In rejecting Crowther's baroque reading of the mathematical sublime we have been able to support Kant's central point that 'Nature is sublime in those of its appearances the intuition of which brings with them the idea of its infinity' (*CJ*, 5: 255). We have been able to do this by connecting our experience of the sublime with the way we negotiate the overwhelmingly vast in nature, where our imagination's running on to infinity in losing its phenomenal restrictions is the determinant of this experience. Where we were able to avoid the criticism levelled by Crowther against Matthews was just in connecting this experience of the sublime with the way the imagination inevitably operates in finding the restrictions upon its synthesizing function relaxed. Here we avoided any claims to the effect that something *seems* to be one way or another. The object may seem to be unlimited, but this does not mean that it seems to be infinite. A sense of the infinite only comes through an imaginative release (after an initial tension), so that vast expanses, as well as vast objects, can bring about a sense of the sublime just through the lack of intuitions for cancelling the time condition.

Because we have (albeit briefly) connected an experience of the infinite as an absolute measure (as an idea of reason) with an awareness of our moral vocation, we have shown that in the case of the mathematical sublime we are not only concerned with an intuitive purposiveness for a

single idea of reason (i.e. the infinite), but for a range of ideas of reason. This purposiveness for ideas of reason must of course remain an indeterminate purposiveness if it is not to amount to a kind of conceptual experience. Insofar as this purposiveness retains the right level of indeterminacy, however, then we have also suggested how in the case of the mathematical sublime we are concerned with an intuitive purposiveness for the *concepts* (ideas) of the faculty of reason, so that the relevant aesthetic character of this response is maintained.¹³

Notes

- 1 Translations are those of Guyer and Wood (Kant 1998) and Guyer and Matthews (Kant 2000) for the *Critique of Pure Reason* (CPR) and *Critique of the Power of Judgement* (CJ), respectively. I replace bold in the translations with italics.
- 2 As we will see, although Kant is explicit in limiting his account to the sublime in nature, he uses examples of the sublime in art (the Pyramids, St Peter's basilica, etc.).
- 3 Even in Kant's account of the dynamical sublime, where it is the power of nature that determines our response, the mathematical sublime appears to be in some sense operative as a condition of this experience. Thus in his discussion of the dynamical sublime Kant speaks of 'Bold, overhanging, as it were threatening cliffs, thunder clouds towering up into the heavens, volcanoes with their all-destroying violence, hurricanes with the devastation they leave behind, the boundless ocean set into a rage, a lofty waterfall on a mighty river, etc. ...' (CJ, 5: 261). With such examples of the dynamical sublime, however, it is clear that magnitude plays a role, for here the sheer magnitude, *in addition* to the sheer force, is what overpowers us. Interestingly the same object can act as the ground of both kinds of experience, and Kant elsewhere speaks of the calm ocean 'bounded only by the heavens' (CJ, 5: 270), where it is clear that this unboundedness and vastness triggers an experience of the mathematical sublime. In this case however power is not operative in triggering our response, and thus the relation between the two does not work both ways, unless we also construe sheer magnitude as power (which does not appear to be the way Kant intends it). Thus Kant's account of the sublime as two distinct kinds of experience is more complex than he would lead us to believe, with at least the mathematical sublime being constitutive of our experience of the dynamically sublime in nature.
- 4 Although I will be disagreeing with the way in which Crowther understands Kant's account of the role of infinity in negotiating the overwhelmingly vast, I believe that he is correct in seeing Kant as arguing that the role of the infinite is essential to connecting the experience of the mathematical sublime with the experience of our rational moral vocation. But because Crowther misreads Kant's account of the role of the infinite, then he misreads the precise way in which the mathematical sublime is connected with morality (even though he recognizes the connection and remains sympathetic to the idea that the experience of the sublime enables us to transcend the limits of sensibility). An important part of my argument will be to show that, insofar as the infinite plays a necessary role in the way we negotiate the overwhelmingly vast, then it is also necessary in characterizing the relations between the mathematical sublime and practical reason.
- 5 Crowther does argue, however, that the infinite may play some role in an overall experience of the sublime, stating with reference to infinity that 'It may be that on occasion vast objects do suggest the idea of infinity to us, but even then this might be explained more economically than in terms of the baroque thesis.' Crowther goes on to

- argue that a vast object may seem infinite and thus be compared to what it may be like to comprehend the idea of infinity as a whole, so that 'On these terms, the suggestion of infinity would be regarded as a by-product of the way the object overwhelms the senses, that is as something which will intensify or enhance the experience of the sublime, rather than something which is necessarily involved in its production' (Crowther 1989: 105).
- 6 See Crowther (1989: 105–6) for his arguments as to why he thinks that Kant aimed at making infinity a key determinant of sublime aesthetic response.
 - 7 Henry Allison argues along similar lines as Matthews, stating that when confronted with the overwhelmingly vast 'the imagination finds itself stretched beyond its natural limits, unable to comprehend in a single intuition the magnitude that its appearance suggests. In other words, such objects present themselves to the imagination *as if* they were absolutely great' (Allison 2001: 232). Allison goes on to argue that the sense of the infinite that is delivered through the object's vastness is importantly connected with the need to use this imagined greatness as an absolute measure, which itself leads to the thought of the supersensible. The confusion with this account however, as with Matthews's, is in the idea of the phenomenal totality *seeming* infinite. If the phenomenal totality seems infinite, then in what sense is it compared (as Allison seems to suggest) with infinity as an absolute measure? By making the object seem infinite, an important distinction is lost between the phenomenal totality which remains 'small' (*CJ*, 5: 258), and the infinite as an absolute totality with which this phenomenal magnitude is compared.
 - 8 This is just to say that perhaps other introspective, or philosophical analytic, evidence can be located for supporting our argument.
 - 9 The relation between time and space as inner and outer intuition, and the synthesizing function of the imagination, is conspicuous in Kant's account of the 'threefold synthesis' in the A-edition of the Transcendental Deduction (*CPR*, A97).
 - 10 Bjorn K. Myskja (2002) sides with Matthews against Crowther's reading of the mathematical sublime, and sees the role of the infinite as an inalienable aspect of a satisfactory reading of Kant's account. In agreement with what we have stated, however, Myskja states that it is not quite precise to say that the object we are calling sublime *seems* to be infinite but that, 'at most, it seems limitless' (Myskja 2002: 135). Just as we are arguing, what the sublime does is lead the imagination to an idea of reason, which in this case is the idea of the infinite. Myskja however leaves his account there and does not discuss why the imagination operates in this manner.
 - 11 This interpretation is further supported within the General Remark that follows Kant's discussion of both the mathematical and dynamical sublime. Here Kant writes that 'the imagination, although it certainly finds nothing beyond the sensible to which it can attach itself, nevertheless feels itself to be unbounded precisely because of this elimination of the limits of sensibility; and that separation is thus a presentation of the infinite' (*CJ*, 5: 274).
 - 12 Given Kant's remark near the beginning of the Analytic of the Sublime that, as far as the division between the mathematical and dynamical sublime goes, the former is concerned with a purposiveness for cognitive concepts of reason (faculty of cognition), whereas the latter is concerned with a purposiveness for practical concepts of reason (faculty of desire), then it might be wondered why I equate the 'supersensible vocation' of *CJ*, 5: 258, with a moral-rational vocation, as opposed to a theoretical-rational vocation. However, although Kant does make this architectonic distinction between the two kinds of aesthetic experience, it seems that he subsequently revised or adapted his account in this respect (or at least strayed from his own architectonic). This is because within the discussion of the mathematical sublime itself, in discussing the issue of the purposiveness

of aesthetic judgement, Kant does unequivocally identify the relevant purposiveness in the case of the mathematical sublime as an intuitive purposiveness for the faculty of reason, where this is 'in order to correspond subjectively with its *ideas* (though which is undetermined), i.e., in order to produce a disposition of the mind which is in conformity with them and compatible with that which the influence of determinate (practical) ideas on feeling would produce' (*CJ*, 5: 256). The *indeterminacy* of these (practical) ideas is important here in maintaining the aesthetic character of the response, so that we are not concerned with a purposiveness for any particular determinate idea of reason, but just a felt accord between the two kinds of experience. In addition to this remark, there is also strong evidence within the General Remark that follows the dynamical sublime that the mathematical sublime is importantly connected with a purposiveness for moral reason. Thus in his discussion of the relations between the aesthetic judgement of nature as such (the beautiful and the sublime) and moral feeling, Kant states that 'Both, as explanations of aesthetically universally valid judging, are related to subjective grounds, namely on the one hand to those of sensibility, as it is purposive in behalf of the contemplative understanding, on the other, *in opposition* to those, as purposive for the ends of practical reason; and yet both, united in the same subject, are purposive in relation to the moral feeling' (*CJ*, 5: 267). Here Kant is not referring to the dynamical sublime apart from the mathematical sublime, but to the sublime as such, so that both the mathematical and dynamical sublime are importantly connected with practical reason. The inseparability of the experience of the mathematical sublime from moral feeling is further apparent when, again referring to the sublime generically, Kant states that 'In fact a feeling for the sublime in nature cannot even be conceived without connecting it to a disposition of the mind that is similar to the moral disposition' (*CJ*, 5: 268). To my mind, however, there remains the possibility that there might be an important sense in which the experience of the mathematical sublime might involve a purposiveness for theoretical as well as practical reason. The fact that the infinite operates as a supersensible substratum that grounds both the possibility of the object and 'our faculty for thinking' might lead in this direction (*CJ*, 5: 255). There is also the question of the fact that the experience of the mathematical sublime is purposive '*for the whole vocation of the mind*' (*CJ*, 5: 259). This is a somewhat complex subject, however, and would require a study of its own. Consequently it is beyond the scope of this paper to explore these speculations further. What I do want to maintain, however, and what I have been arguing here is that there is a definite sense in which the mathematical sublime importantly involves a purposiveness for practical reason. See Allison (2001: 301–24) for argumentation in support of the idea that the mathematical sublime is purposive for practical but not moral reason. For a defence of the view that the mathematical sublime is purposive for theoretical rather than practical reason, and for an account of the relations between aesthetic experience and morality more generally, see Guyer (1993: 187–228; 2006).

- 13 Crowther has also criticized Kant's 'baroque' reading on the ground that, because the infinite is supposed to operate as a measure against which phenomenal items are compared, then the aesthetic experience depends upon quite determinate (predominantly moral) concepts. In this sense Crowther, when referring to Kant's remarks upon the supremacy of reason, writes:

In this respect, for example, we not only have to recognize the superiority of reason over imagination, but also to know that this is in accordance with the broader demands of reason. Our pleasure arises, we will recall, 'from the correspondence of this very judgment of the inadequacy of the greatest sensible faculty in comparison with ideas of reason, insofar as striving for them is nevertheless a law for us' [*CJ* §27]. This means that, in Kant's

exposition, the sublime hinges on quite specific (morally significant) concepts concerning *the scope and significance of reason*. This determinate conceptual content, of course, raises problems concerning the sublime's aesthetic status. (Crowther 2010: 180)

We recall that our experience of the sublime does depend upon our recognizing that what is phenomenally given is small in comparison with the infinite as a supreme measure. This also accords with our moral vocation whereby our moral selves must (through a demand of reason) overcome the limitations of our sensible selves. Because our aesthetic experience involves our actually being aware of the fact that there is an absolute measure that makes small the phenomenal magnitude (exposing the inadequacy of our imagination for comprehending this magnitude), then for Crowther it is a kind of conceptual recognition and not an aesthetic one, and in this sense Crowther further writes that 'This kind of awareness is not at all intuitive and bound up with intrinsic features of the relation between cognitive capacities per se: it is something much more definite, and centres on a "higher-level" understanding of philosophical matters' (Crowther 2010: 188). But the awareness that what is phenomenally given is small in comparison with what is absolutely great (where this recognition accords with what Kant calls a law of reason) does not in fact depend upon a 'higher-level' understanding of philosophical matters. Because we are not involved in an abstract process of measurement by comparison with a standard (Crowther's baroque thesis) in negotiating the phenomenal item, and then recognizing that this accords with a demand of reason, then we are not introducing some complex conceptual procedure into the possibility of the aesthetic experience. It is instead the case that the imagination's failure of comprehension when faced with the vast has a knock-on effect, where this leads inexorably to the infinite as an idea of reason and to the recognition of the infinite as an absolute standard for comparison (thereby opening the way to an intimation of further (indeterminate) ideas of reason concerning our moral vocation). In this process (which can be relatively instantaneous) recognizing the phenomenal as small here does not involve any complex process. Once we have formed the idea of the infinite as a supreme measure, then it is inevitable that what is before us phenomenally is comparatively tiny. Because this experience is *analogous* to our moral vocation, whereby our sensible selves are diminished in comparison with the demands of our moral selves, then it is also inevitable that this should be reflected within the aesthetic experience itself, as a felt accord. None of these procedures involves an understanding of higher-level philosophical matters, but just a healthy faculty of reason. Consequently we have a process whereby the *intuition* is purposive for indeterminate ideas of the faculty of reason so that, contra Crowther, it is precisely through the 'relation between the cognitive faculties' that the aesthetic pleasure in the case of the mathematical sublime is connected with the idea of the infinite.

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