

Gabo's Stones

Martin Hammer and Christina Lodder

In *The Realistic Manifesto*, written in Moscow in 1920, Naum Gabo provided a vivid account of the spirit in which he produced his sculptures:

With a plumb line in hand, with eyes as precise as a ruler, with a spirit as taut as a compass, we build them in the same way as the universe builds its own creations, as the engineer his bridges, as the mathematician his formulae of the orbits.¹

The idea of constructing or building three-dimensional sculptures from planar elements was at the core of Gabo's art. In common with other artists in the 1910's, notably Pablo Picasso and Vladimir Tatlin, he embarked upon this new method of working as a radical alternative to the sculptor's traditional technique of modelling and carving. For Gabo the idea of construction represented an artistic equivalent to the innovations of contemporary science and technology. It also permitted the introduction into sculpture of modern, industrially materials such as sheet metal, glass and the new plastics. A work such as *Column* epitomises the highly mechanistic and architectonic character of Gabo's early constructions, produced in Moscow and Berlin. For the rest of his long career, spent mainly in England and the United States (where he died in 1977), Gabo remained faithful, in the mainstream of his work, to the 'constructive method' which he had initially conceived during the first world war.

What, then, possessed Gabo to produce the decidedly, solid carved sculptures on display in this exhibition, which were made using traditional tools and natural materials? A general answer might be that all artists of substance, even one as single minded as Gabo, relish setting themselves new challenges and extending their resources. In that sense, the carvings are comparable to the paintings which he produced intermittently throughout his career, or to the wood-engravings which he began to make in 1950.

More specific reasons are suggested by the chronology of Gabo's involvement in carving. The works in this exhibition date from the 1930's onwards. *Stone with a collar*, his first work to incorporate a carved stone, precisely registers the transition between the planar constructions and forms which Gabo subsequently carved from a single block. While the attached collar is made from opaque plastic and the strip from painted metal, the two solid elements are carved in contrasting Portland Stone and black slate. In exhibition catalogues Gabo always dated *Stone with a collar* to 1933, when he had just left Nazi Germany and was beginning his short, unhappy stay in Paris. In fact he had only made a very rough, small scale model before his arrival in Britain in March 1936. It was quite common for Gabo to date works according to when he had arrived at a definitive conception and produced a model; the moment at which the essential idea was resolved

¹ Naum Gabo and Noton Pevzner [Antoine Pevsner], *Realisticheskii Manifest* (Moscow, Second State Printing House, 1920), reprinted with a translation in *Gabo: Constructions, Sculpture, Paintings, Drawings, Engravings* (London, Lund Humphries, 1957), inset opposite p.151, and pp.151-2. The present quotation is taken from the author's translation.

was more important than the point at which he happened to execute a version on a particular scale and in materials appropriate to that scale. It now seems certain that *Stone with a collar* was first turned into a finished sculpture during the second half of 1936, in response to a commission by the English painter Winifred Nicholson.² Gabo subsequently made the large variant exhibited here which, as early photographs show, initially included a black strip arching over the stone and a secondary plastic collar.³

Kinetic stone carving was Gabo's first pure carving. It was begun in London in 1936 and completed in Cornwall towards the end of the Second World War. In the meantime Gabo had made a number of smaller works testing the properties of different kinds of stone, including *Quartz Stone Carving*, *Alabaster Carving* and *Granite Carving*. Such explorations were almost certainly stimulated by Gabo's close contacts with British sculptors. At this time, to a much larger extent than their European contemporaries, Henry Moore and Barbara Hepworth displayed a particular commitment to carving in stone and wood, allowing the graining and resistance of the materials to condition the eventual form of their sculptures. Gabo was evidently interested in this type of work, even before his move to London, as evinced by Ben Nicholson's report of his conversations with Gabo in Paris:

He seems to hold a very high opinion of Barbara's work – he said her sculpture is the most important being made today either abroad or in England. He then went on to say that in England he also admired Moore's work very much & that he was bound to arrive at something very important but that he had not yet evolved his true ideas as Barbara has.⁴

The model for *stone with a collar* was created soon after Gabo's arrival in Paris, so it is unlikely that English sculpture provided the initial catalyst for Gabo's exploration of carving. When it came to making the finished sculpture, however, Gabo must surely have benefited from talking to Hepworth and Moore about technical practicalities. Gabo had never trained as an artist and had virtually no previous experience of stone carving. Indeed, the formal inspiration of these sculptors' work also seems evident in *Kinetic Stone Carving*, which recalls for instance, the 1935-6 sculpture by Moore which was illustrated in *Circle*, the survey of current constructive art and architecture produced in 1937 by Gabo, Nicholson and architect Leslie Martin.⁵

In the sculpture section of *Circle* for which he was responsible, Gabo produced an essay on 'Sculpture: Carving and Construction in space' in which he sought to expand the ideas of *The Realistic Manifesto* and at the same time to acknowledge the validity of the kind of sculpture which he had rejected in 1920: '...in using the spatial element in sculpture I

² This argument is fully documented in Martin Hammer and Christina Lodder, *Gabo* (London and New Haven, Yale University press, 1995), forthcoming.

³ See *Gabo* (1957), plates 50 and 51.

⁴ Ben Nicholson, letter to Herbert Read, 24 January [1936], p.7, Herbert Read archive, University of British Columbia, Victoria.

⁵ J.L. Martin, Ben Nicholson, N. Gabo, eds., *Circle: international survey of constructive art* (London Faber and Faber, 1937), plates 9 and 10 in sculpture section. Hammacher suggested that with this work Gabo 'had succumbed for a moment to his English environment' (A.M. Hammacher, *The sculpture of Barbara Hepworth*, London, Thames and Hudson, 1989, p.75).

do not intend to deny the other elements... volume still remains one of the fundamental attributes of sculpture, and we still use it in our sculptures as often as the theme demands an expression of solidity.’⁶ Gabo also seems to echo the current British discourse about ‘truth to materials’:

The genesis of a sculpture is determined by a material... There is no prohibition against a sculptor using any kind of material for the purpose of his plastic theme depending on how much his work accords with the properties of his chosen one...Carved or cast, moulded or constructed a sculpture does not cease to be a sculpture as long as the aesthetical qualities remain in accord with the substantial properties of the material.⁷

At a more practical level, Moore and Hepworth were avid collectors of found natural objects, pebbles, shells, bones and driftwood, which acted as a constant stimulus to their sculptural inventions. Gabo developed a similar penchant, especially during the seven years that he lived on the Cornish coast near St Ives. A sizeable haul of stones accompanied him when he moved to the United States in November 1946. Like the English sculptors, he began to carve directly into pebbles which nature had already weathered into pleasing shapes. (eg p.4).

During the next few years in America the only significant sculpture which Gabo produced was *Repose*, shown in Hartford in 1954. His renewed enthusiasm for stone carving in the early 60s resulted in part from a change in his working methods. Now in his seventies, he began to think in terms of preparing for his work for posterity, stimulated by the prospect of a major retrospective exhibition.

Gabo was losing his physical strength and dexterity, but now could afford to hire studio assistants who helped him produce durable and often greatly enlarged versions of his most valued constructions, using metal and spring-wire in preference to more fragile plastics. This new system of studio production also enabled him to undertake commissions for monumental public works. This aspect of his activity presents an obvious parallel with the later careers of Moore and Hepworth. In contrast, when he was working on his own, Gabo tended to concentrate on more private activities such as small-scale carvings which he produced in considerable quantities in his later years.

At the same time, the impulse to complete his creative legacy led him to look for a professional carver who could turn some of his favourite stone models into large-scale, fully realised sculptures. When Leslie Martin visited America in summer 1963, he told Gabo about the wonderful quarries in Portugal where he had a house. That December Gabo made the first of a number of visits to Portugal, with the intention of acquiring materials. Antonio Duarte, a Portuguese sculptor who specialised in stone-carving, accompanied Gabo to Pero Pinheiro, ‘the land of the stones’.⁸

⁶ Naum Gabo, ‘Sculpture: Carving and Construction in space’, *Circle*, pp.105-6.

⁷ *Ibid*, pp.105-6

⁸ Antonio Duarte, letter to Gabo, 10 January 1964, Yale.

Gabo subsequently commissioned him to make a series of carvings, using Gabo's models, the stones which they had selected together and an 'apparatus for enlargement'.⁹ Duarte completed three sculptures in time for the 1965 retrospective, *Redstone* and *Quartz stone carving* in the present exhibition, and an enlarged version of the *white stone* which Gabo had only recently carved in Connecticut.¹⁰ Gabo may have added some finishing touches to these works, but the large stones, like the late constructions, were essentially produced by other hands. Gabo continued to commission works from Portugal, including large versions of *Granite carving*, conceived in model form, some 25 years earlier, and of *Alabaster Carving* which now turned into *Construction in space with Rose Marble Carving*.

In the 1930's, Gabo may have been stimulated by the work of his English friends and contemporaries, but this does not seem sufficient to account for such a sustained engagement with stone carving. It also seems reasonable to suppose that this type of work meant more to the artist than occasional relief from the finicky work of cutting shapes in plastic or threading nylon strings across the spaces of his constructions. How then can the carvings be connected with the main body of Gabo's work and ideas?

Stone with a collar is in fact pivotal work in Gabo's development, since it is the first construction in which he used the irregularly curved forms and flowing lines characteristics of his subsequent work, in place of the pure Euclidean geometry which underlay the constructions which he had produced in Berlin in the 1920's. Indeed, the change of materials and technique may have helped Gabo free himself from ingrained habits and make the break-through to a more curvilinear language of form.

This new departure had a significance for Gabo beyond purely formal concerns. In his essay *Circle*, he was at pains to emphasise that abstract art could embody content, and should not therefore be seen as merely decorative. His own declared aim was to communicate and arouse in the viewer a range of ideas, emotions and sensations which would inform his or her experiences of life in a more general sense. Gabo indicated, for example, that the openness of constructed sculpture has a particular capacity to project space as an 'absolute sculptural element':

Our task is to penetrate deeper into its substance and bring it closer to our consciousness; so that the sensation of space will become for us a more elementary and everyday emotion the same as the sensation of light or the sensation of sound.

In our sculpture space has ceased to be for us a logical abstraction or a transcendental idea and has become a malleable material element.¹¹

One passage may refer directly to *Stone with a collar*, which was illustrated in *Circle* as a demonstration of the synthesis of carving and construction: 'adding space perception to

⁹ *Ibid.*

¹⁰ Miriam Gabo, carbon of letter to regine Duarte, 29 March 1965, Gabo papers Beineck Rare book and manuscript library, Yale University, New Haven.

¹¹ 'Sculpture: carving and construction in space', p.107.

the perception of Masses, emphasising it and forming it, we enrich the expression of Mass making it more essential through the contrast between them whereby Mass retains its solidity and space its extension.¹²

Gabo's understanding of the visual character of space was formed by his strong interest in contemporary scientific theory, which he had maintained ever since his studies at Munich University before the First World War. This was implicit in his later explanation of *Spheric Theme*, constructed in 1937:

I found no answer in graphic terms in science which would satisfy my vision of space. I consider that in this work of mine there is a satisfactory solution to that problem. Instead of indicating space by an angular intersection of planes, I enclose the space in one continuous surface. I eliminate angularity in space construction and give space the curved character which it has to my perceptions.¹³

Such remarks clearly indicate that Gabo was influenced by scientific discourse. With the general theory of relativity of 1915, Albert Einstein had established that the physical universe exists not within absolute space and absolute time, conceived separately from one another, but rather within a dynamic space-time continuum, a system conforming to the principles of spatial curvature in Non-Euclidean geometry. This new conceptual model had enormous repercussions for scientific research, although the fundamental ideas were, and remain, extremely difficult to grasp. A few years elapsed before they began to filter through a wider audience, a process in which an important role was played by popular surveys such as Sir James Jeans' *The Mysterious Universe*, which appeared in numerous editions following its initial publication in 1930. Jeans summarised the relevant aspect of relativity theory as follows:

...this theory tells us that space itself is curved, much in the same way which the surface of the earth is curved. The curvature of space is responsible for the curving of rays of light which is observed at a solar eclipse, and for the curvature in the paths of planets and comets, which we used to attribute to a 'force' of gravitation. On this theory, the presence of matter does not produce 'force', which is an illusion, but a curving of space... The more matter there is in the Universe, the more curved space will be, the more rapidly it will bend back on itself...¹⁴

As it happens, Gabo's collection of scientific books included a copy of *The Mysterious Universe* (1937 edition) as well as Sir Arthur Eddington's *The Expanding Universe*, first published in 1932, which dealt with related concepts, and which Gabo seems to have owned before 1936 since his copy was a French translation. Gabo was clearly aware of such scientific theorising, and it does not particularly matter whether or not he had sophisticated conceptual grasp of the principles. The important point is the striking correlation between current discussions of spatial curvature and both the formal qualities of a sculpture from the early 1930's *Stone with a Collar*, and Gabo's own retrospective

¹² *Ibid.*, p.108

¹³ Gabo (1957), insert between plates 63 and 65-6.

¹⁴ Sir James Jeans *The Mysterious Universe* (Cambridge, Cambridge University press, 1937), p. 53.

account concerning the introduction of a curved rather than an angular system of space into his work. The idea that matter generates spatial curvature about itself finds a vivid parallel in the line of the black strip in the construction as it emerges from the late base , performs a taut loop in space, and then links up with the plastic collar , which in turn appears to be generated by the form of the white stone. There is no contradiction between seeing *Stone with a Collar* as an exercise in abstract formal invention and reading it As Gabo's attempt to create an accessible aesthetic metaphor for a new and exciting idea in modern physics.

In *Rose Marble Carving* as in contemporary constructions such as *Crystalline Centre*, Gabo explored the relationship between an inner element and an outer surround. Although the carved form seems very simple and frontal, it actually contains a complex pattern of movements. The central diagonal element conveys a sense of potential rotation in space. This form in turn appears to generate the twisting ellipse, with its implied suggestions of both a spinning movement and of rotation around the vertical axis. Moreover the transition within the curve of the ellipse from an external bulge to an interior hollow creates an interplay between recession and projection, evoking the illusion of latent rotation in depth around the diagonal axis. The denial of mass is reinforced by mounting the form in a plastic surround, so that it appears to float weightlessly in space. As in *Stone with a Collar* the overall configuration suggests the centrifugal generation of curved space around a central core of matter. Yet the asymmetrical regularity is very different and seems related to Eddington's description of the curvature of space, which he compared visually to a magnetic field and to his image of the universe as a four-dimensional bubble rotating around a plane.¹⁵

Gabo's other carvings may seem to be primarily devoted to the shaping of masses. Yet the artist emphasises their continuities with the spatial concerns evident in the main body of his work. He told an interviewer in the 1960s:

My idea of space affects everything: that's why I continue to carve in stone. I want to show that in out consciousness we are all transparent, space penetrates everything. Your eyes can't penetrate the stone, but by following the contours on the surface I want your consciousness to become aware of the interior spaces and dynamic forces.¹⁶

Once again the language in which Gabo described his art has a scientific resonance. The breaking down of the common-sensical distinction between solid matter and the surrounding empty space had been a fundamental tenet of modern physics, which conceived the physical universe as a continuous 'field' of forces and energies. Sir James Jeans provides a representative account of how this idea was understood in the 1930s:

...forever solid matter melts into insubstantial radiation: forever the tangible changes into the intangible... the tendency of modern physics is to resolve the whole universe into waves... These waves are of two kinds: bottled-up waves, which we call matter, and unbottled waves, which we call radiation or light... it no longer seems surprising that the

¹⁵ Sir Arthur Eddington *The Expanding Universe* (harmondsworth, penguin, 1940), pp. 28-30.

¹⁶ 'Naum Gabo: "Space is Not Outside Us;', *The Times*, 15 March 1966.

fundamental particles of which matter is built should exhibit many of the properties of waves.¹⁷

In other words, a block of stone did not differ in fundamental physical terms from a volume of space defined by transparent or opaque planes. Gabo's shaping of the block was clearly designed to convey the presence of dynamic forces within the form, rather than to suggest an inert solidity. In *Kinetic Stone Carving*, for example the sensuous curvilinear forms advance and recede creating a sense of dynamic centrifugal energies within the form. The sharp definition of the of the linear edges plays a particularly important role in leading the eye around and, so to speak, through the form, thereby dematerialising its material substance. The format of linear rhythms circulating through and around interpenetrating volumes is further elaborated in many of the works in the present exhibition, notably *Granite Craving*, *Quartz Stone* and in the selection of translucent marbles for *Repose*, *White stone* and other carvings from his later career.

The strongly scientific or mathematical aura of Gabo's work differentiates it from the carvings of Hepworth and Moore, which generally evoke associations with a more immediate imagery of the human figure or landscape. It was not Gabo's purpose, however, merely to illustrate scientific ideas. In a text from the 1950s called 'art and science', he declared that both the artist and the scientist are prompted by the same creative urge to find a perceptible image of the hidden forces of nature', and he expressed pride in the fact that Constructive art was 'the first movement in art which has declared its acceptance of the scientific age and its spirit'.¹⁸ Nevertheless, for Gabo, art ultimately differs from science in that it springs, from and engages with, the realms of feeling and intuition, ass opposed to the ration pursuit of knowledge:

The new scientific vision of the world may affect and enhance the vision of the artist as a human being, but from there on the artist goes his own way and his art remains independent from science; from there on he carries his own vision bringing forth visual images which react on the human psychology and transfer his feelings of men in general, including the scientists.¹⁹

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¹⁷ Jeans *The Mysterious Universe*, pp. 97-9.

¹⁸ Naum Gabo, 'art and science' *Gabo* (1957), p.180

¹⁹ *Ibid.*, pp. 180-1.

