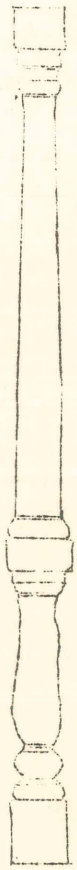

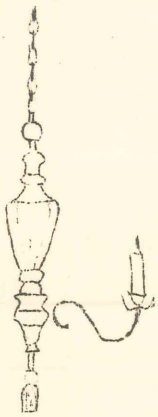

The Collegian

St. John's College

Nov. - Dec 1963

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Editor . . . . . David Lachterman
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Faculty Advisor . . . . . Eva Brann

EDITORIAL

In order to encourage excellence in creative writing the COLLEGIAN has established a short-story contest. All St. John's students are invited to submit short stories on any theme to the editor before the end of the first semester. The contributions will be judged on the basis of imagination, coherency of theme and skill in using language to display ideas and characterizations convincingly. The absolute and not the relative excellence of each contribution will determine the selection of the winning story; if no contribution meets the judges' standards the contest period will be extended. The author of the winning short story will be awarded a twenty-dollar gift certificate for use in the College Bookstore. The judges will be Miss Eva Brann, Mr. Richard Scofield and the editor.

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The following is the solution to the mathematics problem in the October COLLEGIAN submitted by Mr. Malcolm Wyatt:

> Proof: Form the longest possible ascending chain, beginning with the first number. Now take the first number <u>not</u> in this first chain and form the longest possible ascending of numbers, none of which appear in the first chain. Then take the first number which does not appear in either of these two chains, and proceed as above. Eventually all of the numbers are used up. If any of the chains thus formed have $\geq$ n+v elements, then we are finished. If not, if all of these chains have length $\leq$ n, then there must be at least n+1 of them. Consider the last element of the last chain. It cannot be greater than all of the elements of the next to last chain, or it would have been a part of that chain. In particular, it must be less than the last element of the next to last chain. Again, this element must itself be less than the last element of the last-but-two chains, or it would be an element of that chain. Continuing, we see that the last elements of the chains themselves form a descending chain, and since there are at least n+1 of these elements, we have found a descending chain of length $\geq$ n+1.

THE MEANING OF REGULAR SOLID

Robert Neidorf

In the last part of the last proposition of the last book of Euclid's Elements, the claim is made that the so-called regular solids, or Platonic solids, are unique. In the Heath translation he enunciates that . . .

> . . . no other figure, besides the said five figures, can be constructed which is contained by equilateral and equiangular figures equal to one another. (SIII, 18)

By the phrase "the said five figures" he refers explicitly to what are commonly called the Platonic or regular solids, which have been constructed one at a time in the earlier portions of Book XIII. The fact is that this enunciation is defective; the purpose of this note is to indicate the defect and demonstrate its possible remedies.

1. The defect - First we review the five solids which are said to be unique members of a class. They are: (1) The cube, a six-sided polyhedron contained by mutually congruent squares. Or, in Euclid's terms, the cube is contained by six equilateral and equiangular quadrilaterals, equal to each other. Each vertex[1] of the cube is composed of three faces. (2) The dodecahedron, a twelve-sided polyhedron contained by equilateral and equiangular (i.e., "regular") pentagons, mutually congruent. Each vertex is composed of three faces. (3) The tetrahedron, a four-sided polyhedron contained by equilateral (and hence equiangular) triangles, mutually congruent. Each vertex is composed of three faces. (4) The octahedron, an eight-sided polyhedron contained by equilateral triangles mutuall congruent. Each vertex is composed of four faces (5) icosahedron, a twenty-sided polyhedron contained by equilateral triangles mutually congruent. Each vertex is composed of five faces.

We see that each of these solids is bounded by a set of mutually congruent faces or surfaces, which are in every case regular polygons. Also, it is clear that Euclid's entire discussion is intended to be restricted to convex polyhedra, which can be defined as those polyhedra which lie entirely to one side of the plane of any face. Hence we are tempted to characterize a regular or Platonic solid as a convex polyhedron bounded by mutually congruent regular polygons. Although Euclid does not use the terms "regular" or "Platonic", it is evident from the cited enunciation that he means to describe some general class of (convex) polyhedra, of which the listed five constitute unique exemplars. The enunciation itself is the only clue as to how he intended to describe that general class; taken literally, the class it describes is the class of (convex) polyhedra bounded by regular ("equilateral and equiangular")

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(1) By vertex I mean the point, and the region around it, on the surface of a polyhedron where three or more faces and edges converge. Euclid calls this a solid angle.

polygons mutually congruent ("equal to one another"). The defect in all this rests on the fact that there are more than five such figures.

As a preliminary to further discussion we require a fixed terminology. We shall say that solids bounded by congruent regular polygons are rho-regular:

> Df. A rho-regular solid is a convex polyhedron whose faces are mutually congruent regular polygons.

Next, we will use the term "Platonic solid" to refer specifically to the five polyhedra listed above; thus the term "Platonic solid" should be understood as having only a denotative meaning. The terms "regular solid" will be defined later. Euclid's enunciation amounts to the assertion that the Platonic solids are the only rho-regular solids, and it is this assertion which turns out to be false.

We begin by restating Euclid's uniqueness proof. From Book XI, 21 it is known that the sum of the plane angles which meet at a vertex must be less than 360 degrees. It is also evident that a vertex on a solid must be composed of a minimum of three faces joined together; hence at least three plane angles must meet at the vertex. It follows at once that there is no rho-regular solid contained by regular hexagons, since the interior angle in a regular hexagon is 120 degrees. Similarly, no vertex could be constructed with regular polygons of more than six sides, for their interior angles are even greater.

The angle in a regular pentagon is 108 degrees, so a vertex can be built up with three and only three such figures; this corresponds to the dodecahedron. For a similar reason a vertex can be constructed from three and only three squares; this corresponds to the cube. Since the angle in an equilateral triangle is sixty degrees, a vertex can be constructed from three, four, or five such triangles, corresponding to the tetrahedron, octahedron, and icosahedron. On the basis of these considerations, Euclid concludes that "no other figure . . . can be constructed which is contained by equilateral and equiangular figures equal to one another." Or, as we should say, no other rho-regular solids exist. But his conclusion is false.

If we seek to build a polyhedron(2) with a stock of regular pentagons or squares, it is clear enough that each vertex must be formed from a junction of just three such faces; hence the dodecahedron and cube are the only such figures possible. If we now try building polyhedra from a stock of equilateral triangles by joining three together at each vertex we get a tetrahedron; by joining four at each vertex an octahedron; five an icosahedron. But suppose we try to build a polyhedron from equilateral triangles in which some vertices are composed of three faces and some of four,

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(2) Or better: the surface of a polyhedron.

or some of four and some of five, etc? This possibility is left out of account in Euclid's text. And if we try such constructions we shall succeed; that is, contrary to Euclid's explicit assertion there exist rho-regular solids other than the Platonic figures. We describe two such solids:

First, lay two identical tetrahedra face to face. The result is a rho-regular figure of six sides. Two of its vertices consist of a junction of three faces, and three of its vertices consist of a junction of four faces. Second, take two equal squares laid together sandwich-wise. Around their common center rotate one with respect to the other 45 degrees (Figure 1). Keeping them parallel, separate them by some con-

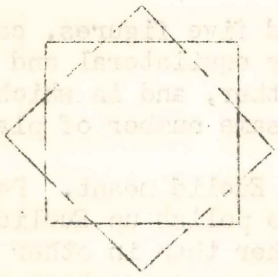

Figure 1

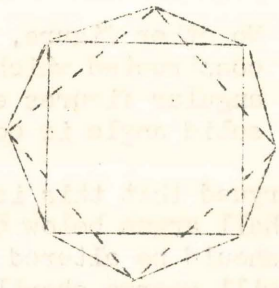

Figure 2

venient distance. From each corner of the upper square drop lines to the two nearest corners of the lower square; in this way a belt of eight triangles will be formed around the squares (Figure 2). If the distance of separation is suitably chosen[3] the lines joining the squares will have the same length as the sides of the squares, and the triangles will be equilateral and congruent. Next, on top of the upper square and under the lower one erect four-sided pyramids with triangles of the same size (each of the pyramids will be half of an octahedron). The resulting figure, having a total of sixteen sides, is rho-regular.[4] Two of its vertices consist of a junction of four faces; the rest of five faces.

2. The first remedy - To escape this difficulty, we need to tighten the specification of the class of solids of which the Platonic figures are to be unique members. The easy and obvious way to do this is to add the stipulation that every vertex must be composed of a junction of the same number of faces; or, briefly, that the vertices must be homogenous in type. We shall use the term "Regular solid" to refer to rho-regular figures which have this property. Rho-regular solids with heterogenous

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(3) It must be $S/\sqrt[4]{2}$, where S is the length of the side of the square.

(4) It is not obvious (unless one builds a model) that this polyhedron is convex; specifically, one worries about the dihedral angles between the triangles around the belt and the faces of the pyramids top and bottom. However, calculation shows that these are convex junctions; the angle is about 154 degrees.

It should be noted that here and at other places throughout this discussion we are assuming the validity of Euclid's Df. 10, Book XI, which states in effect that a convex polyhedron is uniquely determined by the size and shape (and arrangement) of its faces; this proposition is notoriously provable.

vertices (such as the two described above) will be called "quasi-regular."

Df. A Regular solid is a rho-regular solid with homogenous vertices.

Df. A quasi-regular solid is a rho-regular solid with heterogenous vertices.(5)

It is clear from Euclid's uniqueness proof that the Platonic solids are indeed the only Regular solids. To render the text precise, we should add the property of possessing homogenous vertices to the characterization contained in Euclid's uniqueness enunciation. Using his terms, it might read as follows:

> No other figure, besides the said five figures, can be constructed which is contained by equilateral and equiangular figures equal to one another, and in which every solid angle is contained by the same number of planes.

It may be argued that this is obviously what Euclid meant. Perhaps. Indeed, I shall argue below that if we are to polish up Euclid's text at all, it should be altered in this way rather than in other equivalent ways which will emerge shortly. But in any case we are here concerned with the logical accuracy of what is written, not with what may or may not have been meant. Furthermore, one often hears it said that the Platonic solids are the only "regular" solids, and that a "regular" solid is (merely) a polyhedron bounded by identical regular polygons: that assertion is wrong.

3. Other remedies - One of the significant properties of the Platonic solids is that they can all be inscribed in a sphere, as Euclid shows throughout Book XIII. It is also evident that the two quasi-regular solids described above are not spherically symmetrical. This raises the following question: Among rho-regular figures, are the Regular solids the only ones which can be inscribed in a sphere, or not? To answer this question we need to establish two theorems.

(A) In any rho-regular solid which can be inscribed in a sphere, the dihedral angles between adjacent faces are all equal.

Proof: Suppose first that the polyhedron is contained by equilateral triangles. Consider a pair of adjacent faces ABC and ABD (Figure 3). The edges AB, BC, CA, AD, and DB have the same length, say S. Point

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(5) I have avoided the natural term "semi-regular" solid, as this already has two other meanings. It has been used to refer to polyhedra whose vertices and edges are identical, and whose faces are regular polygons of different types; these are also called Archimedean solids. The term has also been used to indicate polyhedra whose vertices and edges are identical, but whose faces are not regular polygons.

O is the center of the circumscribed sphere; hence the lines joining it to the vertices at A, B, C, and D are all equal; let them have length R. M is the mid-point of AB, and lines MC, MO, and MD are filled in.

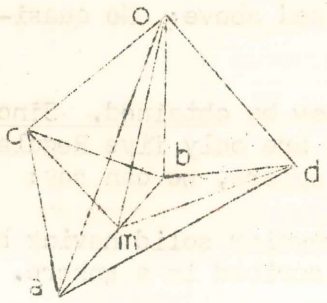

Figure 3

Since ABC is an equilateral triangle, CM is perpendicular to AB; for the same reason, DM is perpendicular to AB. Since AOB is an isosceles triangle, OM is again perpendicular to AB. Hence CM, OM, and DM lie in one plane (cf. Book XI, 5). Next, we see that the lengths of CM and DM are uniquely determined by S.(6) Also, OM is uniquely determined by S and R.(7) Finally, OC and OD have length R, so the sides of the triangles OMD and OMC are uniquely functions of S and R, and therefore so are the angles in those triangles. Further, the triangles have been shown to lie in one plane, and the angle DMC is a measure of the dihedral angle between the faces (cf. Df. 6, Book XI). Hence that angle(8) is determined by S and R, and since S and R are the same for all faces, all the dihedral angles must be the same. An exactly similar argument will hold if the faces are squares or regular pentagons.

The second theorem we need is the following:

(B) In any rho-regular figure whose dihedral angles are equal throughout, the vertices are homogenous in type.

Proof: Take any two vertices on the surface of such a figure, and think of them as juxtaposed in such a way that two of their faces are coincident (or "superimposed"). Since the dihedral angles are equal all around both vertices, and the angles in one equal to the angles in the other, all the faces in the one must coincide with all the faces in the other. Hence there must be the same number of faces in each.

Combining theorems A and B we can now assert:

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(6) $CM = DM = S\sqrt{3/2}$.

(7) $OM = \sqrt{4R^2 - S^2/2}$.

(8) Angle $DMC = 2 \arccos (S/\sqrt{12R^2 - 3S^2})$.

(C) Any rho-regular solid inscribable in a sphere has homogenous vertices. (Or: Any rho-regular solid inscribable in a sphere is Regular.)

This answers the query raised above: No quasi-regular solid can be spherically symmetrical.

Some further results can now be obtained. Since Euclid's uniqueness proof does show that there are only five Regular solids and that each one can be inscribed in a sphere, we can say:

(D) Any rho-regular solid having homogenous vertices can be inscribed in a sphere.

Comparison of C and D shows that rho-regular solids have homogenous vertices if and only if they can be inscribed in a sphere. Although we defined Regular solids as rho-regular solids having the first property, we could have defined them in terms of the second instead.

Next, we note that from B and D it follows that:

(E) Any rho-regular solid having equal dihedral angles can be inscribed in a sphere.

Comparison of E and A shows that rho-regular solids can be inscribed in a sphere if and only if they have equal dihedral angles throughout. Hence the three properties:

(i) Having homogenous vertices,
(ii) Being inscribable in a sphere,
(iii) Having equal dihedral angles,

are equivalent with regard to all rho-regular solids; any such polyhedron possesses all of these properties or none of them.

From the logical point of view, we could therefore have selected (ii) or (iii) in specifying the meaning of a Regular solid, rather than (i). By the same token Euclid's uniqueness enunciation could be amended by reference to (ii) or (iii) instead of (i). Property (ii) is especially attractive in view of the preoccupation with spheres exhibited by ancient astronomers and cosmologists. However we are obliged to hold that (i) is the most appropriate choice. For if we suppose that Euclid meant by a Regular solid rho-regular figures which also possess property (ii) or (iii), his proof that the Platonic solids are the only Regular ones would require additional considerations along the lines of theorems A and/or B above. As it is, no further "alterations" of the text are required to make it logically adequate.

4. A further refinement - We have proposed that the uniqueness enunciation at the end of Book XIII of the Elements should read as follows:

No other figure, besides the said five figures, can be

> constructed which is contained by equilateral and equiangular figures equal to one another, and in which every solid angle is contained by the same number of planes.

Although this is logically adequate in conjunction with the proof which follows it, it is not ideally elegant; specifically we can show that it is partly redundant. For the phrase "equal to one another", which is underscored above, evidently means that the faces of the polyhedron in question must be mutually congruent. But it happens that if a convex polyhedron is bounded by regular polygons of the same type (all triangles, or all squares, etc.) then it follows that the faces are of the same size as well (and hence congruent or "equal to one another.")

To prove this we first establish a lemma:

> Lemma: In a convex polyhedron there can be no junction between polygonal edges of unequal lengths.

Proof: Suppose there were a polyhedron with adjacent faces F and G having unequal edges meeting along the line AB. In the figure 4 it is convenient to imagine that the surface of the polyhdron is viewed from the outside, and that F lies in the plane of the paper.

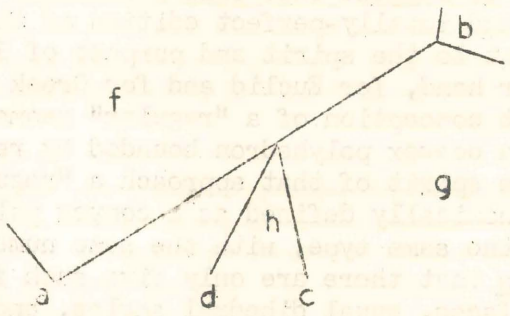

Figure 4

Since the entirety of a convex polyhedron must lie to one side of the plane of any face, the whole of the polyhedron in question will be on or behind the plane of the paper.

Consider the vertex at V. If this were formed by a junction of just three faces, the third face would have to be in the plane formed by the lines AV and VC; but this is also the plane of G. Hence there must be more than three faces meeting at V, and there must be one or more additional lines (i.e., edges formed by the junction of two faces) radiating out from V. One of these lines, call it VD, forms with VC two sides of the face adjacent to G along the line VC. We will call that face H. Next consider the line of intersection between the plane of H and the face F. Since that line passes through the

point V, it must fall in some direction across the face F.(9) Hence part of F will lie to one side of the plane of H, and part to the other side, which is impossible in a convex polyhedron. This establishes the lemma.

Now suppose there exists a convex polyhedron contained by regular polygons of the same type, but of at least two different sizes. The faces would be mutually similar; hence if two differ in size, all of the edges of one would be shorter or longer than all of the edges of the other. Thus somewhere on the surface of such a polyhedron there would have to be a junction between two polygonal edges of differing lengths. But the lemma shows that this is impossible. Thus if any convex polyhedron is bounded by regular polygons of the same type, they must be mutually congruent as well.

With this result it emerges that the conjunction of properties indicated by Euclid's phrase "equilateral and equiangular figures equal to one another" is partly redundant; it could be replaced by the weaker phrase "equilateral and equiangular figures having the same number of sides"; it would follow that the figures (i.e., the faces) would be "equal to one another."

I certainly do not mean to suggest that this refinement ought to be packed into some ideal and ideally-perfect edition of the Elements, for it is not really relevant to the spirit and purpose of Euclid's effort in Book XIII. On the other hand, for Euclid and for Greek mathematics generally, the important conception of a "regular" geometrical solid turns on the notion of a convex polyhedron bounded by regular polygons; I am arguing that in the spirit of that approach a "regular solid" is most adequately and economically defined as a convex polyhedron bounded by regular polygons of the same type, with the same number meeting at each vertex. It follows that there are only five such figures, and that each one has identical faces, equal dihedral angles, and spherical symmetry.

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(9) Unless it is coincident with AB. But then AB would be the line of intersection between the planes of F and H, and also between the planes of F and G. Then, as the planes of F, G, and H would all meet in the line AB, AB would also be the line of intersection between the planes G and H. But VC is that line.

A MYTH FOR OUR TIMES

Lawrence Feinberg

Not long ago, I had a few conversations with someone who swore me to secrecy concerning them. For reasons which shall become evident, I may not reveal who that person was; however I have his permission to relate to the public the substance of a particular conversation we had, shortly before we parted. It was not actually a conversation, for he spoke and I listened without replying to him in any way. Times are such that I can no longer refrain from telling others what he told me, and though hesitant about the veracity of his words and the public's credulity, I here make that conversation known to all, to stand or fall by my reader's judgment of it.

An elder of a certain tribe, after much deliberation, decided that he and his fellows should end their existence as speedily as possible. Why he reasoned thus, or what his moral promptings were, no one knew; as a wise man amongst his people, his counsels were sought in all important matters, consequently it was not without much concern and fear that the people learned of his grave decision.

Now the persons of this tribe were not of the same species as you and I, or if in fact they did bear us some resemblance, it will never be known. For each individual lived, from birth to death, in a box the dimensions of whose each and every side was 10 feet by 10 feet. Their way of life must seem a mystery to beings like us -- certainly there could not have been propogation of the species as we understand it. Yet every individual of that tribe was most intimately acquainted with life in all its formal aspects: When movement was heard outside of one's box where no movement had been heard before, this was a sign that life had been generated; likewise the cessation of external sound was construed as the cessation of life. In this way every one knew that his fellows would regard him as no longer existing when they failed to perceive movement in the place in which he was. The knowledge of one's own death was nonetheless incomprehensible, for how could there be cessation of movement without its being perceived?

Language as we know it was unknown to this tribe. Their grammar of expression consisted of certain knockings and rappings on the walls of the box. Since there was no direct confronting of one individual with another like himself, this language could not be taught in the same way that our language is taught. But only those of the feeblest intelligence failed to learn the language; for the most part it was only after one was advanced in years that he was able to grasp how the various knockings were used and himself put into practice that knowledge of knockings which had taken so long to acquire. The language in its comprehensible forms of expression was chiefly used by the tribal elders, and consequently there existed the possibility of knowledge of a state of affairs. (Let us not forget this point.)

The technique for using knockings was intricate: various shades of meaning

were expressed by the number and kinds of knocks, and the more refined and subtle thoughts were expressed by lessening the intensity of the blows. Since language is the vehicle of thought, we may rightly suppose that the tribe's mental life was similar in certain respects to our own. For example, the vulgar, whose thoughts were expressed by hard and manifold knockings, were greatly agitated by this incessant pounding (and were without the means to change their condition); while the soft and delicate rappings of philosophic thought brought a calm and untroubled life to the few tribal philosophers, who were unaffected by the problems of their less fortunate neighbors.

My reader knows that a box is a six-sided figure, and from this he probably infers that every member of the tribe, save those at the periphery, was surrounded by six other boxes, each containing a neighbor. But it should be stated that the positions of the boxes with respect to one another was not known, nor should the reader suppose that he can construct by analogy the tribal situation. The concepts of right, left, up, down, foreward, backward, had no meaning in the knock language, but it appeared that everyone was born with the knowledge of inside and outside, and these concepts formed the foundation of tribal life. Each box contained no object but the being who inhabited it, and since it was impossible to get outside of one's own box, each inhabitant understood himself and his box as comprising the inside of things, while all that was on the other side of his dwelling was outside. (There was no conception of inside one's self or outside it -- box and occupant were one entity.) Physical contact between individuals was impossible, and therefore no one had any wants -- which is a great boon to any people. Communication had begun as an amusement, and only gradually had the language-game developed, until at last it was the sole occupation of most persons.

Once established, tribal communication became a serious affair, and the individual attempted to divert his attention to the outside. In effect this was an illusion which few grasped -- for 'outside' was only another box and occupant, certainly no world about which persons could have knowledge. The wisest individuals, aware of their true condition, were content for the most part to dwell upon these facts. Their conclusions were always the same: each supposed that he was the most blessed of beings, with only himself for company. At infrequent times, though, two wise ones who dwelt in close proximity informed one another of their thoughts concerning existence, and in this way a kind of Esoteric Wisdom had arisen. The vulgar, be it said, never ceased their knockings long enough to attentively listen to others, and hence lived in ignorance.

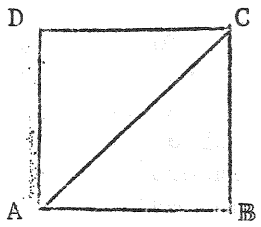
This had been the situation until the incident mentioned at the onset had occurred -- a wise man had concluded that all existence must cease. At first there was no response to his message, but by his incessant, barely audible rappings he succeeded in disrupting the communication of Esoteric Wisdom. It was not long afterwards that everyone knew of him. At once all knockings ceased, then a furious din was raised, and it too abruptly ceased. A reply came to him asking him to repeat his message. He did so, explaining his reasons. These were not startling to the initiated ones, although the vulgar were astonished -- he explained to everyone that there

was no such thing as outside, that every individual was inside. But, he argued, this was not a blessing but a curse, for communication lost all meaning when it was shown that there was nothing that could be communicated. The knock-language was a sham.

Thus for the first time the tribe learned of its collective existence, but it further realized that this existence was being threatened by the very person who had informed everyone. Hatred for that one spread through the entire people -- pandemonium was everywhere. Without exception the tribal members furiously threw themselves against the sides of their boxes, to reach and destroy their betrayer. Boxes, undergoing such violence, collapsed, and their occupants were at once annihilated. The frightened philosopher at last began to stir when he perceived that all motion had stopped -- everyone was dead but he. Thereupon, the philosopher was seized by a fit of incontrollable laughter, and he then trod over every inch of his dwelling, rapping gently over the smooth surfaces.

A STRICTLY EUCLIDEAN DEMONSTRATION THAT THE SIDE AND DIAGONAL OF A SQUARE ARE INCOMMENSURABLE.

Samuel Kutler



Let AB be a side and AC a diagonal of the square ABCD; I say that AB and AC are incommensurable.

For suppose they are commensurable. Then AB has to AC the ratio which a number has to a number. (X.5)

Let AB be to AC as E is to F. Let G be the greatest number that measures E and F. (X.3)

Since G measures E and F, let the two numbers P, Q by multiplying G make E, F; therefore as P is to Q so is E to F. (VII.18)

But as E is to F so is AB to AC.

Therefore, as P is to Q so is AB to AC (V.11)

Now, let K and L be the square numbers for which P and Q are the sides, (VII Defs. 16 and 18)

Therefore, as K is to L so is the square on AB to the square on AC. (X.9)

But the square on AC is equal to the squares on AB,BC. (I.47)

And AB,BC are sides of the square ABCD. Therefore, the square on AC is double the square on AB. (I.34)

Therefore L is the double of K. (V.11)

And L is an even number. (VII Def. 6)

Since Q is the side of L, Q is also an even number. (IX.29)*

Therefore, L is an even-times even number. (VII Def. 8)

But K is also an even number, since L is the double of K. (IX.33)*

Again P is the side of K, therefore P is an even number. (IX.29)*

Now, since P and Q are both even, they are each measured by a dyad. (VII.16)

Therefore, the double of G measures both E and F, which is impossible since G is the greatest number that measures E and F.

Therefore, etc. Q.E.D.

* For, if we assume otherwise, we immediately obtain an absurdity from the proposition cited.

Raymond Queneau

Si tu t'imagines
si tu t'imagines
fillette fillette
si tu t'imagines
xa va xa va xa
va durer toujours
la saison des za
la saison des za
saison des amours
ce que tu te goures
fillette fillette
ce que tu te goures

Si tu crois petite
si tu crois ah ah
que ton teint de rose
ta gaille de guêpe
tes mignons biceps
tes engles d'émail
ta cuisse de nymphe
et ton pied léger
si tu crois petite
xa va xa va xa
va durer toujours
ce que tu te goures
fillette fillette
ce que tu te goures

les beaux jours s'en vont
les beaux jours de fête
soleils et planètes
tournent tous en rond
mais toi ma petite
tu marches tout droit
vers sque tu ne vois pas
très sournois s'approchent
la ride véloce

la pesante graisse
le menton triplé
le muscle avachi
allons cueille cueille
les roses les roses
roses de la vie,
et que leurs pétales
soient la mer étale
de tous les bonheurs
allons cueille cueille
si tu le fais pas
ce que tu te goures
fillette fillette
ce que tu te goures

Translated by
Christian Harrison

Chinka chuhng, chinka chuhng, chinka chuhng chuhng chuhng
Hey sweet thing in that skintight sweater,
If you think your lovin's gonna keep gettin' better,
If you don't think that time is runnin' out instead,
Then baby you been misled, misled, baby you been misled.

Hey sweet thing with them high priced hats,
Try your painted toenails in these two-bit flats,
Take them nylon stockins off your sexy legs,
And see how they fit in size 28 pegs,
Cause if you don't think that they will fit in time,
Then honey you committin' yourself a crime,
You been waitin' around for a rich man's bed,
But baby you been misled, misled, baby you been misled.

Yes sweet baby you are off the beam,
Thinkin' party party party is an unendin' theme,
Cause the sun and the moon may go round and round,
But you are headin' straight for a hole in the ground,
And there ain't a single man in the world can save
Your sweet round fanny from the cold cold grave.
Chinka chuhng, chinka chuhng, chinka chuhng chuhng chuhng
And before you get there, my good lookin' friend,
You gonna rest your lips on a big triple chin,
You'll get a mighty lot o' wrinkles in that rosy cheek,
And need a big, strong girdle cause your muscles are weak,
Now baby you been savin' a sweet, red rose,
And its ripe for pickin', says the man with a nose,
So baby lets you and me pluck it today,
And let the petals fall baby, where they goddam may,
Cause if you don't baby,,yes if you don't,
If you keep messin' round with will and won't,
If you keep on waitin' for that rich man's bed,
Then baby you been misled, misled, baby you been misled.

ROUSSEAU AND THE ANCIENTS

David Lachterman

Introduction

The central problem of modern political philosophy, political philosophy after Machiavelli, is power. As the doctors of the Church wrestled valiantly with the enigmas of the Trinity trying to elucidate the identity, individuality and province of the Persons so political philosophy -- secular theology -- must determine the relationships between prince and people, ruler and ruled, or more generally, part and whole. It is the common assumption of theorists such as Hobbes, Locke and Rousseau that civil society is artificial, a work of man and not of nature. In passing therefore from his original, a-political state into civil society, the individual sacrifices whatever privileges he may have enjoyed in the state of nature for the sake of something new although not necessarily something better. It becomes the task of political philosophy to understand the new relations that do or ought to arise among men in a political community: relations involving the distribution and legitimacy of authority and power and the obligations of the ruled to their rulers. Thus, a complete account of society must include a description of man in the state of nature -- his rights and responsibilities -- and an explanation of what man acquires or loses by deciding or being forced to unite in political societies.

Rousseau is chiefly concerned with explaining this transition without introducing the exercise of constraint or force on the part of any individual. His problem is to describe a form of political association in which the advantages of the civil order fully recompense the loss of natural independence. However, his intentions go beyond the solution of this particular problem. In several, central aspects of his political thought, Rousseau reveals an indebtedness or, more accurately, a sympathy with the ancients i.e., Plato and Aristotle. This sympathy requires a break with the tradition of modern political theory laid down by Machiavelli. His political construction is in part determined by an understanding of the true end of civil society that few of his contemporaries, especially Hobbes, would share. At the same time, however, he accepts the notion of consent or contract, the mechanism invented by the moderns to explain the transition from nature to society. He is concerned, as, perhaps, Plato and Aristotle were not, not only with what the city ought to be but also with how it can come to be. In brief, Rousseau seems to adopt modern means to achieve ancient ends. Perhaps his greatest concession to the modern spirit would be the admission that the ends justify the means.

In presenting and interpreting the thought of Rousseau I shall make use of five categories which represent the fundamental issues that he investigates: the state of nature, the social contract, sovereignty, the general will, and law. Underlying each is the idea of liberty; it is in the gradual unfolding of the meaning of this idea that the spirit of Rousseau's thought can best be grasped.

Section I

The most cursory examination of the Discourse on the Origins of Inequality and the first book of the Social Contract will undoubtedly reveal what seem to be two fundamentally opposed understandings of the state of nature. In the first treatise we find a panegyric on the nobility of savage man; in the second, an eulogy of social man. In the first, the establishment of society entails the depravity of the human race; in the second, it brings about its ennoblement. If however we attempt to distinguish Rousseau's purpose in each writing it may appear that the two understandings correspond to two different intentions. As long as we adhere to Rousseau's advice to "lay facts aside", that is, to refrain from confounding history and philosophy,(1) we should be able to regard each understanding not as a categorical assertion of (historical) fact but rather as an hypothetical construction designed to serve a particular end.

In the Discourse the abusive, tyrannical condition of present day political society is given; philosophic inquiry must account for this condition, it must explain the origin of society and its evolution until the present, a present in which "we see around us hardly a creature in civil society who does not lament his existence". The main argument of the Social Contract, on the other hand, does not assume the existence of any political society; it proceeds within the realm of the ought not the is.(2) Rousseau's initial remarks in the first vhapter of the Social Contract explain the connection between the two writings quite clearly: "Man is born free and everywhere he is in chains . . . how did this change come about? I do not know. What can make it legitimate? I think I can answer this question." The first sentence is historical, that is, it represents as an actual fact the enslavement of man in society.(3) It echoes the description, in the Discourse, of the final degradation of society -- the conversion of the legitimate into arbitrary power or, more briefly, the state of slavery.(4) However, Rousseau does not intend to examine the roots of this condition, he forsakes the historical method used previously in the Discourse. The last sentence could be misleading if we regarded Rousseau as proposing to render legitimate the actual condition of civil society, the condition of master and slave. Rather, he must be understood as bringing into question civil society itself, apart from any historical instances of it; the form of his question is thus what can make any civil society legitimate, taking man as he is and the laws as they might be? The answer proposed in the Social Contract is meant as an ideal basis for the founding of any society.

(1) Cf. esp. Introduction to the Discourse on the Origin of Inequality (hereafter Discourse)(Everymans ed.) p. 175-176; also, end of First Part p. 206.
(2) In violation, it should be noted, of Machiavelli's basic methodological restriction, cf. Prince, Ch. XV.
(3) "all ran headlong to their chains as hopes of securing their liberty." Discourse, p. 221.
(4) Discourse p. 231

I have devoted so much space to this distinction because most of the confusion regarding Rousseau's political theory seems to arise from the failure to separate the Discourse and Social Contract as I have done. Indeed, the preoccupation with the "noble savage", the conviction that Rousseau intended man to return to the idyllic and pristine state of nature(5) must have been the result either of a hurried and superficial reading of the text(6) or of a misapprehension of Rousseau's purpose in the Discourse: an indictment of the illegitimate exercise of political power.

Despite the difference in purpose between the two writings, the axioms of the 'science of mankind'(7) set forth in the Discourse are for the most part unchanged in the Social Contract. Since Rousseau claims that his political construction is based on the "nature of man" it will be essential to our purpose to uncover these axioms within the description of the "state of nature". In doing so we are likely to discover that nature in these two phrases has two distinct meanings.

Man in the state of nature must be stripped of every disposition, passion and talent that he possesses and can only possess in society. It was Hobbe's mistake to attribute to his natural man passions, pride and the fear of violent death for example, which only came about as the result of communal life. Thus his identification of the state of nature with the state of war is spurious; man's life prior to any form of association or mutual dependency is "simple, uniform and solitary". All intercourse with other men, even the most casual, is rare and insignificant. The great store of nature supplies each individual's physical needs without demanding toil. Man thus lives only in the consciousness of the present,(8) an animal like other animals stronger than some, weaker than others.

What of the moral and metaphysical side of savage man? Rousseau believes that he has discovered the two fundamental operations of the human soul prior to reason: the desire for self-preservation and compassion at the sight of the pain or death of any sensible being, particularly of any human being. Man in the state of nature is "destitute of every species of intelligence". Since "the understanding is greatly indebted to the passions" and vice-versa(9) and since the passions originate in our wants of which we must have some idea or to which we are directed instinctively, it follows that savage man's desires are limited to physical want. Man is a creature of pure sensations, lacking even the most simple knowledge.

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(5) Cf. for example, Otto Gurbe, Natural Law and the Theory of Society 1500-1800 (Eng. tr. Cambridge, 1950) p. 109

(6) Cf. esp. the concluding paragraphs of the Discourse where Rousseau imputes this interpretation for his adversaries.

(7) Preface to Discourse, p. 168

(8) Discourse p. 187

(9) This reciprocity Hobbes seems to have ignored. Cf. Leviathan Bk. I, Ch. 3, 6.

However Rousseau makes two crucial distinctions between man and the other beasts. The beast is directed solely by nature -- instinct -- whereas man in his capacity of a free agent can choose between acquiescing and resisting the impulse of nature. Man's liberty, his free will, is natural and his consciousness of this liberty "displays the spirituality of his soul". Secondly, man in contrast to the beast possesses the faculty of self-improvement, of almost unlimited perfectability. It is this faculty that gradually "draws man out of his original state, produces his discoveries and errors, his vices and virtues". Nevertheless, it is important to recognize that in the state of nature, before any inconveniences or deficiencies impel man to improve his faculties,(10) these two distinctive qualities are largely irrelevant. Man's free will is rarely exercised; his perfectability is, in a true sense, pure potentiality. Here we begin to see two possible meanings of the word 'nature': pristine, original state and essence or entelechy -- the full actualization of possibility. It is in this latter sense that the nature of man is understood in the Social Contract -- what man ought to become if he is to be a true man.(11)

I mentioned previously the feeling of compassion which Rousseau attributes to man in the state of nature; this innate sentiment is the spring of all social virtues -- generosity, clemency, humanity, friendship. Although Rousseau denies that men in the state of nature have any "moral relations or determinate obligations one with another" the natural virtue of compassion is the one feeling that contributes to the preservation of the species. This virtue is especially interesting because its analogue in civil society is conformity to the law(12) and because the corrupt and debased civil society thrives on the profit every man foresees in the misfortunes of his neighbors. The development of existing society entailed the extinguishing of compassion; the success of the rational society requires its preservation in a different form. It is because of this virtue that Rousseau can characterize man as naturally good (although actually wicked) -- a fundamental axiom of the science of mankind.

I have tried in the preceding paragraphs to collect the essentiaal descriptions of man in the state of nature as given by Rousseau in the Discourse on the Origin of Inequality. His own words can best summarize what I have been arguing: "Let us conclude then that man in a state of nature, wandering up and down the forests, without industry, without speech, and without home, an equal stranger to war and to all ties, neither standing in need of his fellow creatures nor having any desire to hurt them, and perhaps even not distinguishing them one from another; let us conclude

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(10) ". . . the fortuitous concurrence of many foreign causes." Discourse, p. 205

(11) Cf. Social Contract, Bk. I, Ch. VIII -- "l'instant qui fit un etre intelligent et un homme."

(12) As Rousseau puts it: "it supplies the place of law, morals and virtues."

that, being self-sufficient and subject to so few passions, he could have no feelings or knowledge but such as befitted his situation; that he felt only his actual necessities, and disregarded everything he did not think himself immediately concerned to notice, and that his understanding made no greater progress than his vanity." One thing more: liberty is the noblest faculty of man.

Whereas in the account of the transition from the state of nature to civil society given in the Discourse, man's faculties and natural goodness are progressively debilitated, the Social Contract (Book I, Chapter 8) views the change as an ascent that affects a radical change in the nature of man or, rather, as I have argued previously, fulfills for the first time tha nature of man. "The passage from the state of nature to the civil state produces a very remarkable change in man, by substituting justice for instinct in his conduct and giving his actions the morality they had formally lacked. Then only, when the voice of duty takes the place of physical impulses and right of appetite, does man, who so far had considered only himself, find that he is forced to act on different principles, and to consult his reason before listening to his inclinations. Although, in this state, he deprives himself of some advantages which he got from nature, he gains in return others so great, his faculties are so stimulated and developed, his ideas so extended, his feelings so ennobled, and his whole soul so uplifted, that, did not the abuses of this new condition often degrade him below that which he left, he would be bound to bless continually the happy moment which took him from it forever, and, instead of a stupid and limited animal, made him an intelligent being and a man." Here civil society is represented as the highest good man can achieve and the state of nature, as a positive hindrance to the fulfillment of all that is best in man. At this point the distinction made previously between the Discourse and the Social Contract is valuable: because all existing states have from the beginning been wrongly constituted, it was necessary in the Discourse to commend the state of nature by way of rebuke;(13) now that civil society is to be constructed anew and properly, it is possible to regard the state of nature in its true form. The two accounts are connected by the parenthetical qualification regarding the frequent abuses of a civil society that is not founded on legitimate authority.

Perhaps the most significant substitution brought about by the transition to civil society is that of civil and moral liberty for natural liberty. Rousseau has argued that liberty belongs to man by nature in one sense, namely, that man in his original condition enjoyed the freedom to follow his own inclination; it will be his task to show how rational civil society guarantees this natural liberty in another sense -- as the actualization of man's possibilities as man.

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(13) This is explicit in the final paragraph of The Introduction, p. 176

Section II

Turning now to the construction of a rational civil society,(14) Rousseau attempts to discover the legitimate conventions that support political obligations -- the duty owed by citizens to their rulers. Two terms in the foregoing must be explained. 'Legitimate' is opposed by Rousseau to 'arbitrary' and has two complimentary connotations: first, that to which a man can freely acquiesce and second, that which conduces to the good of those whom it serves. A convention is an artifice, a work of man not of nature. However, the conventional in Rousseau is higher than the natural, in the sense of original, because it testifies to the perfectability of man, to his ability to escape the thralldom of instinct.

From what has been said about legitimate it should be clear that force or compulsion can have no part in the institution of the rational political society. A major part of the first book of the Social Contract is consequently a refutation of political theories that set up force as the origin and prop of political obligation. Such theories invoke alleged rights -- the right of the strongest, the right of the conqueror -- which Rousseau shows to be meaningless: a right is based on a reciprocality of interests and responsibilities; where one party is all powerful the other yields to him not because he ought to obey but because his desire for self-preservation forces him to obey. The 'ought' in this analysis will become increasingly important; for the moment it need only be pointed out that duty is always a moral, never a physical obligation. Hence the exercise of physical power can never legitimize itself; right can never be established by fact.(15)

If right, not force, is the legitimate foundation of society, the end of the political community must be adjusted accordingly. Under a despot the people are said to enjoy tranquility,(16) violence is curbed and men's lives are no longer threatened from every side; but, Rousseau asks trenchantly, "What do they gain if the very tranquility they enjoy is one of their miseries? Tranquility is also found in dungeons, but is that enough to make them desirable places to live?" As long as a people is merely subject to a ruler, as long, that is, as the interests of ruler and ruled are not the same, power will be arbitrary and obedience a physical necessity.(17) What is to be secured in

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(14) In the Discourse, civil society is largely a matter of chance, Cf. p. 223

(15) An additional instance of the 'idealism' of Rousseau's endeavour, in contradistinction to Machiavelli's. See also Grotus, The Laws of War and Peace, Bk. I, Ch. III, paragraphs VI-VII for the argument of the supremacy of the prince over the people.

(16) Compare Hobbes Leviathian, Part II, Ch. XVII -- beginning

(17) See the discussion in the Social Contract, Bk. I, Ch. II of whether the rulers rule for the sake of their subjects.

civil society is not merely life, but rather that freedom which man enjoys by nature. Alienation of liberty can never be the basis of society, Hobbes notwithstanding. "To renounce liberty is to renounce being a man." Civil society must be a reflection of the essential nature of man (and liberty is the essence of man) or else it will inevitably degrade and debase man until he will look back with regret on his primitive, a-political conditions.

Rousseau finds man equipped for nobler ends than mere physical existence; indeed his freedom, which is one with his perfectability, makes it possible for man to become a moral being, in a sense which I shall explain later. Therefore the crucial question for Rousseau is how the existence of the state can be compatible with human freedom or, in other words, how can liberty and obedience be reconciled.(18)

In the Discourse the gradual diminution of nature's abundance and the concomitant rise of agriculture and industry combine to introduce equality between men: inequality of possessions and resources and thus of power. The state of primitive society(19) became a "horrible state of war". The rich, desiring to secure their lands and wealth, conceived the "profoundest plan that ever entered the mind of man": to ally themselves with their enemies in order to use the combined force of their attackers for their own protection. If it was the profoundest, it was also for Russo the most treacherous plan that man has conceived. "All ran headlong to their chains, in hopes of securing their liberty" -- a hope soon and irremidiably disappointed.

In the Social Contract natural incommodities outweigh the resources of each individual for his self-preservation; man then realize that it is only by combining their individual forces that they can save themselves from perishing. No mention is made of property, wealth, compulsion or the state of war.

What form should their association assume? If any individual is dependent on the will of another individual, his liberty is abridged; if any individual retains for himself privileges which his associates do not share, their liberty is abridged. Each associate must remain as free as before yet with the advantage of having the common force of the whole for his defense. The fulfillment of these two requirements is provided for in the terms of the contract: "each of us puts his person and all his power in common, under the supreme direction of the general will, and, in our corporate capacity, we receive each member as an indivisible part of the whole." Although the central term --

(18) Cf. Social Contract, Bk. III, Ch. XIII (p. 80 in St. John's text): "l'essence des corps politique, etc."
(19) Not civil society in the full sense, but an aggregation of families living on the same land.

the general will -- will only become meaningful in the subsequent discussion, it's possible to see how this contract eliminates personal dependency: the individual alienates his person and possessions to the corporate whole, the "moral and collective body" created by the act of association and not to any other individual; each individual in turn is accepted as a part of this whole, enjoying its protection and having a voice in its deliberation.

The social compact however -- and this is possibly Rousseau's most striking contribution to the political dialogue -- does not establish any particular regime, any constitution such as a democracy or monarch. The discussion of government is postponed until the third book. Having united themselves into a public person, the people do not constitute or even elect by this act a government; instead, they create the Sovereign.(20)

Section III

Rousseau commends the philosophers, especially Hobbes, who realized that to understand the foundation of political society it is necessary to go back to a state of nature.(21) In this sentiment, at least, he is firmly leagued with the moderns against the ancients. Political philosophy, then, must not merely describe how the best or most stable order might be constructed; its real task is to justify the authority exercised by the ruler. This modification of the fundamental political question is the outcome of the modern conviction that man is not by nature (i.e., originally) a political animal.

Rousseau's Sovereign satisfies this requirement inasmuch as all who submit to any act of authority are its authors;(22) they will be, in effect, obeying themselves. Rousseau expresses this reciprocality of authority and obedience in the distinctions given in the Social Contract Bk. I, Chapter 6: the active aspect of the body politic is called sovereign (this activity is legislation); the passive aspect, state. Citizens are those who share in the sovereign power: subjects, those who are under the law; but, every member of the people is both citizen and subject and hence those who obey the law write the law.(23) By justifying political authority in this way. Rousseau can quickly dismiss that ancient question: whether the ruler rules for his own sake or for the sake of the ruled. If the sovereign is a collective body whose members are the citizens, it clearly cannot have interests opposed to theirs, for the same reason that a living body can maintain it-

(20) Compare the wording of the covenant in Hobbes, Leviathan Part II, Ch. 18 (p. 143, Liberal Arts text). Especially noteworthy is the notion of representation, expressly rejected by Rousseau.
(21) Discourse, p. 175
(22) Compare Hobbes' account of authors and actors, Leviathan, Part I, Ch. XVI
(23) Cf. Social Contract, Bk. III, Ch. XIII: "the words subject and Sovereign are identical correlatives, the idea of which meet in the single word 'citizen'.

self only when all the members, or organs are healthy.(24) "Merely because the sovereign exists,(25) it is always what it should be". There should be, in the rational society, some legitimate source of authority; that is, as I have explained above, a source of authority that it is right for men to obey; but this is what the sovereign is, for it is always right for a man to conform at his own will and thus the proposition is true.

In spite of the perfection of the relation between sovereign and citizen, there is a grave difficulty in establishing an equally successful relation between subject and state. An individual may think it proper for him to enjoy "the rights of citizenship" without being prepared to fulfill "the duties of the subject", in short, he may refuse to obey the authority of the sovereign. Consequently, the body politic must reserve the right to compel a man to obey. In Rousseau's paradoxical formulation this means that a man is forced to be free. The full significance of this statement will hopefully become apparent in the discussion of Law (Section V).

Before passing on to the general will, I should like to clarify two issues involved in the notion of sovereignty. Sovereignty is a central concept in Hobbes, too; but how great is the difference between its meaning there and in Rousseau! For Hobbes, by the original covenant every man alienates his right to govern himself, that is to obey what his own will dictates. Instead, a single man or a body of men (or the whole body of the people, an alternative rarely considered) is given the right of acting in the name of each, while each in turn "owns and acknowledges himself to be the author of whatsoever he that so bears their person shall act or caused to be acted". "He that carries this person is called sovereign."(26) In every case the will of the sovereign is what Rousseau calls a particular will, to which each must submit his own will. In the Social Contract, quite to the contrary, it is to dissolve the body politic to promise to obey any particular will, that of a monarch, for example.(27) Sovereignty can never be transferred to an individual or a group of individuals for by its very nature it belongs to all the people; indeed, it is the very bond that makes a people, a single corporate being, out of an aggregation of men.

Consequently, government, which is the bearer of sovereign power in Hobbes, becomes in the Social Contract an intermediary between the sovereign and its subjects. For the determinations of the sovereign, that is to say, the will of the people, to be put into action by every individual, some force is necessary; this

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(24) Rousseau himself recognizes the partial inaccuracy of this comparison. See Discourse on Political Economy p. 252 (Everymans ed.), for the reservation and comparison in its fullest form.
(25) Translating "par cela seul qu'il est" existentially, not qualitatively.
(26) Cf. Hobbes Leviathan Part II, Ch. XVIII, p. 142-143
(27) Cf. Social Contract Bk. II, Ch. II

force, which brings the people as subjects into conformity with its own will as citizens, is the government or supreme administration.(28) Its power is executive while the will of the sovereign is legislative. From this it follows that the only valid or proper acts of the sovereign are laws; whereas the government acts legitimately when it takes steps to secure "mutual correspondence between subjects and sovereign", in other words, when it makes every man free.

Under closer scrutiny sovereignty is made to reveal its essence: the general will. It is this that we now have to examine.

Section IV

The social compact creates a moral body, moral, because it has a will: an act forced upon us, one, that is, that we do not will to do, can never be moral.(29) The terms of the compact name this will: it is the general will, to whose authority every associate entrusts his person and his possessions. In what follows I shall be primarily interested in assembling and explicating the various notions Rousseau associates with the general will; in the final section a discussion of the positive acts of the general will (the laws) will introduce an analysis of the fundamental issue in this paper: the similarity between Rousseau's political ideas and those of the ancients.

While the social contract provides a quasi historical, and sovereignty a political, explanation of social obligation, the notion of the general will presents a psychological or philosophical account. Sovereignty is the active aspect of the city; Rousseau illuminates what this means when he writes that the sovereignty "is only the exercise of the general will".(30) The ground of political rights and duties thus becomes not so much something that is explicitly political (as institutions, constitutions) as something corresponding to a pschyological faculty.

Rousseau in the preface to the Social Contract declares that his purpose is to reconcile right and interest, justice and utility. The immediate or explicit argument behind the notion of the general will does just that; it demonstrates that submission to the conditions one imposes on others is both equitable and in one's own interest. For the general will must be distinguished both from the will of all and the will of the majority. The generality of the general will is fundamentally qualitative, it is defined less by the number of votes then by the nature of

(28) This administration takes the collective name of 'Prince' -- surely a reference to Machiavelli.
(29) Social Contract, Bk. I, Ch. III
(30) ibid. Bk. II, Ch. I

the voter and the object of the vote. The voter is a citizen, a member of the sovereign and is therefore concerned with the "public advantage" rather than with his private interest. (Rousseau wants to show, of course, that public advantage and private interest coincide.) Thus a unanimous decision reached by a body of men each guided by his private interest is not a decision of the general will; nor, a fortiori, is a majority decision under similar circumstances.

The general will considers only the common good and hence is always right -- because it pursues the object for which it was instituted. The question properly put to each citizen is "is it to the advantage of the state?".(31) Consequently whenever the issue relates to some particular or determinate object -- an individual, a profession, a class of subjects -- the will of the people loses its generality, for in that case each citizen is judging something foreign to himself; particular interests replace the common interest that unites all. The mathematical metaphor that Rousseau uses to describe what happens when the general will is being determined is somewhat obscure.(32) From the footnote we gather that the common interest must make itself felt in opposition to various private interests. Two voters with contrary private interests meet together in the perception of the common interest; thus cancelling their private interests.

Every valid act of the sovereign recognizes all citizens collectively and all actions in the abstract. The carrying out of these acts is obligatory because each has agreed to fulfill the conditions he has imposed on others; as long as the will remains general, each man is obeying, in effect, his own will.

Now the special effect of this arrangement according to Rousseau is that "in fulfilling them (social obligations) we cannot work for others without working for ourselves".(33) Every man by nature prefers himself above all other men; in casting his vote every man thinks of himself -- each man constantly wills the happiness of all because each man thinks of himself when thinking of all. Certainly no man will impose burdensome or injurious conditions on others which he himself is obliged to fulfill. Every sovereign act is thus legitimate because based on the social compact, equitable, because common to all and useful, because it has the general good as its object. Notwithstanding the absolute power of the body politic over all of its members, the general will cannot impose fetters that are useless or even harmful to the community.

In exchanging the state of nature for the social order man gives up his natural independence for civil liberty, liberty limited

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(31) ibid. Bk. IV, Ch. I
(32) ibid. Bk. II, Ch. II
(33) ibid. Bk. II, Ch. IV

only by the general will. Far from being a renunciation this is an advantageous exchange, "instead of an uncertain and precarious way of living they have got one that is better and more secure, instead of the power to harm others security for themselves, and instead of their strength, which others might overcome, a right which social union makes invincible".

I stipulated previously that the foregoing presentation contained the explicit argument of the social contract. The obscurities of that argument along with its utilitarian tone might provoke questions concerning the fundamental character of the society and the people who are to live under the social contract. Why does the general will refrain from imposing useless fetters on the community? Why will particular wills meet in the recognition of the common interest? Is self interest, the preference each man has for himself, the sole ground of political obligation? If so, is this interest noble or base? Is civil liberty --freedom as Hobbes understands it -- the only fruit of social existence? In short, what is the relationship between the general will or, more precisely the law and the moral character of those subject to it? The very fact that Rousseau attempts to answer these questions, both in the Social Contract and in the Discourse on Political Economy, testifies to his deviation from modern political thinking, or, at least, from the conviction of the true end the city common to the moderns. Whether his answers correspond to the solutions given by the ancients is the subject of the next section. Perhaps I have prejudged the issue by calling Rousseau's political construction a rational civil society.

Section V

By way of preamble I should like to exhibit two passages from Rousseau's writings which demonstrate his awareness of the quarrel he tried to reopen.

> "As nature has set bounds to the stature of a well-made man, and, outside those limits, makes nothing but giants or dwarfs, similarly, for the constitution of a state to be at its best, it is possible to fix limits that will make it neither too large for good government, nor too small for self maintenance." (Social Contract, Bk. II, Ch. 9) "I shall suppose myself in the Lyceum of Athens, repeating the lessons of my masters, with Plato and Xenocrates for judges and the whole human race for audience." (Discourse, Introduction)

The first reminds us of Plato's similar discussion in the Republic; more significantly, it suggests that the context or field of Rousseau's political construction is the ancient polis, not the modern Leviathan.(34) The second advises us that

(34) This suggestion is already implied in the demand for periodic assemblies of the whole people and is strengthened by the contents of the 'Dedication to the People of Geneva' at the head of the Discourse.

Rousseau's arguments here and, by extension, elsewhere, are to be judged according to the principles of the ancients.

In Rousseau as in Plato and Aristotle virtue and reason are inseparable and, moreover, necessarily involved in any determination of the best political order. Rousseau adds to these the concept of liberty, for him the essential element of the nature of man. To see how these three ideas are interrelated and how their interrelationship established Rousseau's allegiance to the ancients is the principle task of this section.

Any decree of the general will which relates the whole people as sovereign to the whole people as subject -- any decree general both as to subject and object -- is a law. The state governed by laws, whether it be a democracy, aristocracy or monarchy is a republic; in other words, a state in which the public things or interests are foremost. However Rousseau forsees the possibility of conflict between the general will and the particular wills of the subjects; will compulsion alone bring the subjects into conformity with the decisions they themselves made as citizens? More generally, what kind of men ought to live in the republic?

Government does of course compel obedience in exceptional cases; nevertheless there is reason to suspect that the majority of subjects obeys not out of fear of punishment but from some positive sentiment or consciousness. We recall that the political equivalent of compassion is obedience to the laws. Obedience can no longer be associated exclusively with self interest; some form of fellow-feeling some real consciousness of the common interest as common must be taken into account. What kind of men might be expected to have such a consciousness? It would be instructive to compare Aristotle's description of homonoia (being of the same mind) with Rousseau's General Will, without necessarily trying to locate the roots of the latter notion.

> "The citizens are said to have homonoia when they think similar thoughts about what is advantageous to them and choose after deliberation the same things and carry out the things opined in common. Thus when all the citizens think the public offices (ἀρχαι) ought to be elective (αἱρεταὶ) there is said to be homonoia between them".

And here some light is shed on the arithmetic metaphor Rousseau uses to explain the operation of the general will:

> "For it is not to be of one mind whenever each thinks the same thing but when each thinks the same thing in relation to the same thing; for instance when both the demos and the nobles think the best should rule."

Unless I am mistaken, this is a reasonably clear description of what Rousseau envisioned in his explanation of the general will. Aristotle goes on to qualify the notion of homonoia: it can

only exist between good men (ἐπιεικέσιν) "for they are of one mind with themselves and with one another . . . the desires of such men are constant and do not flow back and forth like the tide; they desire just and advantageous things, which they aim at in common. The base on the other hand cannot be of the same mind except to a small degree."(35)

If it is only good men who can perceive the common interest and vote for it, surely only good men will conform to their own decisions. Compassion was for Rousseau the sign of man's natural goodness; through obedience to law and what it presupposes -- consciousness of the common interest -- that goodness persists in the rational civil society although it has been fully extirpated in the existing civil societies. This conclusion, however, is of little value until we have discovered how Rousseau understood the good man or if, indeed, he admitted his existence or, perhaps, his indispensability.

For Plato the account (logos) one gives of the just city corresponds to the account of the just man; for Aristotle ethics and politics are inseparably correlated. It is indeed a constant and distinguishing feature of ancient political thought that the virtue or depravity of a man's character has an essential influence on the character and permanence of any regime. The best state should therefore contain the most virtuous men. The best state, furthermore, is the one in which wisdom -- either living (the philosopher-king) or traditional (the laws) -- rules: the rational state; just as the best man is the rational man, the man whose actions are directed by reason. Virtue is a kind of knowledge, a mode of activity determined by and in conformity with reason.

The terminology of the Social Contract (moral liberty, moral equality), the idea of the legislator and the entire Discourse on Political Economy (Rousseau's answer to the Prince of Machiavelli) make it abundantly clear that Rousseau is concerned with ethics and in much the same way as Plato and Aristotle were. Consequently we might expect Rousseau to understand the good man, the citizen of the Republic, as the man whose actions are guided by reason -- his own or that of another.

The general will always wills the public good but sometimes it fails to understand what that good is that it is willing. Likewise, the individual always desires his own good and in acting thinks that he is doing what is good but he too is often deceived.(36) Both are in need of guidance. And here I may allow Rousseau to speak for himself:

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(35) Aristotle, Neomachean Ethics 1167a26 ff. (My translations)
(36) This argument may be examined in greater detail in Plato's Gorgias 466E-468E

> "The individuals must be compelled to bring their wills into conformity with their reason: the general will must be taught to know what it wills. If that is done, public enlightenment leads to the union of understanding and will in the social body; the parts are made to work exactly together, and the whole is raised to its highest power. This makes a legislator necessary."

Here we have reached a crucial point: Rousseau accepts the modern notion of contract with its denial that man is by nature political, yet he also accepts the ancient requirement that reason direct the operations of the city-- a situation only brought about by the intervention and supervision of a god-like, sublimely wise man who sets up the laws for a people. Contract alone is insufficient to assure the foundation of a rational political society, for the many are not wise or enlightened, they are blind.

The legislator -- and Rousseau is thinking of Solon, Lycurgus, and perhaps Numa Pompilius-- at the appropriate time in the history of a people(37) establishes a system of laws based on a thorough understanding of their passions, capacities and circumstances. The laws he sets up impose continual deprivations, the advantages of which no young people can be expected to understand. Hence he cannot appeal to reason in order to have his laws accepted; reason is the product of his enterprise. Nor does he have any actual authority, being neither sovereign or prince -- "his office has nothing in common with human empire". Therefore he prefers the authorship of the laws to the gods, hoping that the greatness of his own soul will certify the "miracle of his mission"(38) and in this he "persuades without convincing".

The lawmaker thus creates the social spirit; he in effect recreates men through the laws bringing it about that "each citizen is nothing and can do nothing without the rest". The city comes to be what it ought to be through wisdom.

It is presumed that after the departure of the legislator the people as a whole will be sufficiently enlightened by his precepts and example to will its true good thereafter; at the same time each subject will recognize the coincidence of his private interest and the interests of the city.

The law becomes the form of rationality in the city, it is the depository of the (divine) wisdom of the legislator.(39)

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(37) Rousseau discusses this point in Bk. 2, Ch. 10 of the Social Contract.

(38) Plato's Laws begins with the question: "Do you take a god or some man as the cause of the setting up of your laws?"

(39) The secularization of the Divine becomes complete when Rousseau calls the "voice of the People" the "voice of God". The imminent God of Spinoza's metaphysics -- the laws of nature -- corresponds in Rousseau to the general will of the city. Adequate reasons, I think, for calling political philosophy secular theology, as I did in the Introduction.

When each subject acquires the habit of obedience to the laws, when each is educated to "the due observance of what is proper",(40) the state becomes solid and lasting for then the law merely "assures, accompanies and rectifies the natural relations between men" -- relations that are grounded in the practice of virtue. The word 'nature' has certainly taken on a new and intriguing meaning which I shall explore in the concluding paragraphs.

A manual for rulers, a new and totally revised version of Machiavelli's Prince, must make the rulers aware of the supremacy of law and the necessity of obedience to the law.(41) Such a manual Rousseau wrote under the title A Discourse on Political Economy. In it he makes explicit what was beneath the surface of the Social Contract.

The general will is found here both under its own name and under the name of the "Public Reason, Which is the Law".(42) It is to this Public Reason that the Prince must listen at all times, for government here is legitimate and popular, having for its object the good of the people (which the public reason determines). "The power of the laws depends still more on their own wisdom than on the severity of their administrators and the public will derives its greatest weight from the reason which has dictated it." Thus the Prince who is under the law and not its master must be its guarantor and must use every means of inspiring the love of it. "The first law is to respect the law."

Thus the government, the legitimate executor of the general will, can preserve peace and order in the Republic, assure tranquility and respect for law in the state. To what other ends could it properly aspire? Does not the fulfillment of the being of any civil society consist in these very things? Certainly, for Hobbes, for those who took the "satires of Machiavelli" seriously.

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(40) Compare Aristotle, E.N. X, ix 1179b20-1180a15.

(41) Rousseau's interpretation of Machiavelli is quite fascinating. I shall quote his most significant remark and most of the appended footnote: "He (Machiavelli) professed to teach kings; but it was the people he really taught. His Prince is the book of Republicans." "Machiavelli was a proper man and a good citizen; but, being attached to the court of the Medici, he could not help veiling his love of liberty in the midst of his country's oppression." Note also that he calls the writings of Machiavelli "the Satires."

(42) This Public Reason determines the rule of what is just and unjust in the city. We might precipitately suppose that justice is relative to each state. Hence, it is well to recall Rousseau's statement in the Social Contract: "Doubtless there is a universal justice emanating from Reason alone." Rousseau is perhaps thinking of the lex naturalis of the Roman juris consults or even of Cicero's "Law is transcendent Reason, implanted in nature, commanding what should be done and forbidding what should not be done." (Cicero, de Legibus I, 6)

> "But if nothing more is done, there will be in all this more appearance than reality; for that government which confines itself to mere obedience will find difficulty in getting itself obeyed. For if it is good to know how to deal with men as they are, it is much better to make them what there is need that they should be. The most absolute authority is that which penetrates into a man's inmost being, and concerns itself no less with his will than with his actions."

The virtues of the subject of the Leviathan are extrinsic, they do not involve his inner character, nor do the laws or acts of the Sovereign attend to this inner character. Rousseau stands here quite resolutely with the ancients.

> "This was the great art of ancient governments, in those distant times when philosophers gave laws to men and made use of their authority only to render them wise and happy. . . . But our modern governments, which imagine they have done everything when they have raised money, conceive that it is unnecessary and even impossible to go a step further."

The government which seeks to have the general will accomplished -- and this is the true office of any legitimate government -- must bring all the particular wills into conformity with it, "in other words, as virtue is nothing more than this conformity of the particular wills with the general will, establish the reign of virtue" -- true virtue, the habit of acting in accord with what reason declares to be good.(43) Government, by enforcing the law, teaches men not to be inconsistent with themselves; it teaches men to be free. "It is not only upright men who know how to administer the laws; but at bottom only good men know how to obey them."

Civil liberty is not all the city gives to men for they also acquire in their renunciation of their natural (i.e., original) independence moral liberty "which alone makes a man truly master of himself; for the mere impulse of appetite is slavery, while obedience to a law which we prescribe to ourselves is liberty".(44) What could be more in the spirit of Plato and Aristotle?

The greatest good of all, which is the true end of legislation, consists in liberty and equality. The former we have described already; the latter is not, according to Rousseau, uniformity of wealth and power, but the proper use of these: "power shall never be great enough for violence -- and no citizen shall ever be wealthy enough to buy another nor poor enough to be forced to sell

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(43) It must be noted, however, that in most cases this Reason does not belong to the particular wills as such; in praising Socrates and Cato Rousseau says "we should be taught by the one (Socrates) and led by the other; and this alone is enough to determine which to prefer: for no people has ever been made into a nation of philosophers but it is not impossible to make a people happy." The people of Rousseau's Republic will be "upright and simple."

(44) Social Contract, Bk. I, Ch. VIII

himself -- which implies on the part of the great moderation in goods and position, and, on the side of the common sort, moderation in avarice and covetousness."(45) Existing societies enslave men. Existing societies reinforce and aggravate the physical inequalities between men. The rational civil society envisioned by Rousseau eliminates both abuses. It replaces slavery with moral liberty -- the possibility of virtuous action -- and natural inequality with a moral and legitimate equality grounded in the moderate use of physical and intellectual advantages.

Therefore, man's happiness does not consist in the "continual progress of the desire from one object to another, the attaining of the former being still but the way to the latter." Nor, does the city, which is the work of man's art, exist as a field in which this restless, insatiable desire can be exercised without the threat of violent death. There is a summum bonum "such as is spoken of in the books of the old moral philosophers", and that ultimate good is liberty, moral liberty, that is, freedom from the passions and freedom to act in accordance with reason. This is man's true interest, although he may not at first recognize it, and it is only realizable in the city. Man ceases to be "a stupid and limited beast and becomes a man" when he creates the city. Nature is not only the original state of things but is also the end of any change, of any coming to be: man is by nature in this latter sense assuredly a political animal.

In the Introduction I qualified Rousseau's commitment to ancient political thinking by describing his concern with the possibility of the rational civil society. The social contract and the legislator are two instances of this concern, for they explain how the city as it ought to be can in fact come to be. It should also be remembered that Rousseau whose own immorality has been excorciated with surprising vehemence,(46) had an abiding faith in the moral goodness of man.

> "The bounds of possibility, in moral matters, are less narrow than we imagine: it is our weaknesses, our vices and our prejudices that confine them. Base souls have no belief in great men; vile slaves smile in mockery at the name of liberty."

It is perhaps the final irony of Rousseau's thought that he drew his evidence for the possibility of the rational society from the societies and men of antiquity. "It is good logic, he said, to reason from the actual to the possible." For there was Greece and Rome and Socrates and Cato. "Let us judge of what can be done by what has been done."

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(45) ibid. Bk. II, Ch. XI

(46) E.g.in Jacques Maritan's Three Reformers: Luther, Descartes, Rousseau where the latter is branded a 'pathological counterfeit'.

CORRECTION TO PAGE 41 COLLEGIAN, October 1963

Robert Sacks

And now the Central Sections

Let the same things be set out as before, but let it no longer be required that angle A'AO be a right angle; and again let it be required to find the relation of the parameter to the lines involved.

Now since $BN,NC = NQ^2$

and $AA' : A'N :: AD : NC$

therefore $AA' : A'N :: BN,AD : BN,NC$

Or $NQ^2 : BN,AD :: NA' : A'A$

As in the case of the parabole, if I draw AF making angle ADF equal to angle BAN meeting AA' at F triangle ABN will be congruent to triangle ADF,

and thus $BN,AD = AN,AF$

therefore $NQ^2 : AN,AF :: NA' : A'A$

Or $NQ^2 : AN,NA' :: AF ; A'A$

Thus AF is the parameter. But this formulation is useless because its construction is dependent upon the choice of the point N. Therefore Apollonius draws the line OK parallel to AA', meeting BC at K.

And since $AD : AF :: AN : NB$

and $AN : NB :: OK : KB$

$AD : AF :: OK : KB$

We now have, etc.