to present you with, is this thing back here [indicating the podium banner], that says, "World at a Turning Point." Now, is this a question? How do you know, that it's at a turning point? You can't "see" a turning point. You can't "taste" the turning point. You can't smell it. So, how do you know that it's at a turning point?

I think that this is the challenge that we're presented with. Thank you.

2. Jason Ross

Two Means Between Two Extremes

We're going to go into, through what means can we peer beyond our senses? How is it that we *can* know, that what we're not seeing is impacting what we do? And, how is it that we, as people here in the LaRouche movement, how are we going to turn around this Dark Age into a Renaissance? How are we going to develop the power and the means to do that?

So, what is a Renaissance? If you speak French, you know that means rebirth, but—what's being reborn? I don't mean fundamentalist Christians. Although, some mystics of a similar ilk, the Synarchists, have ideas of giving birth to fascism (**Figure 2.1**).

Now, we're against single-issue politics, but this is something we definitely should abort. So, let's get rid of these midwives. Let's get rid of them!

So, let's turn to the real mid-wife of the Renaissance: Plato's Socrates, who tells us, in his *Thaeatetus*, that he delivers ideas, not babies. But, how do we deliver ideas from the senses?

We can understand the limitations of sense-perception, by trying to act in it, and finding the problems that we encounter; and we'll situate this with Plato's conception of "power" and of "means." We'll start with the *Meno* dialogue, which contains the famous exercise and demonstration of the doubling of the square. It's here that Plato, using one of Meno's slave boys as a subject, demonstrates, only through asking questions, that the understanding of the correct method for doubling the square, already exists in the boy's mind, as a potential; it merely has to be uncovered, or recollected. So, let's put up the solution to that (**Figure 2.2**).

We've got our original square, the dark square on the bottom left. The first attempt made is to double each side of the square, in the same way that you would double a length, giving us the large exterior square, that's four times as large. But, the doubled square is the crooked square that you see in the middle, which contains four triangles, of which the original square had two.

Let's look at performing this process again (**Figure 2.3**). We've got this action of doubling, that goes from that original square to the doubled square; and then, from that doubled square to a quadrupled square in black.

Now, here's where the idea of a "mean" comes in. The word "mean" has a number of meanings, actually: It means not only a middle, but also a method of effecting a certain result in English, German, French, Russian, Spanish (I imagine), and probably more languages, too. This philological observation indicates that there's this concept of creation and generation, as inherent in any existence. English also uses "mean," in the sense of "meaning." And, these different

FIGURE 2.1

FIGURE 2.2

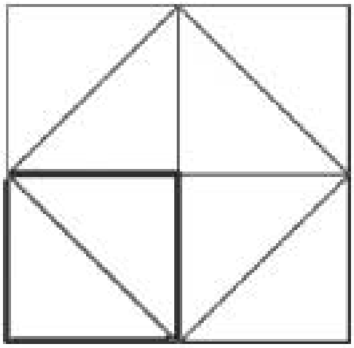
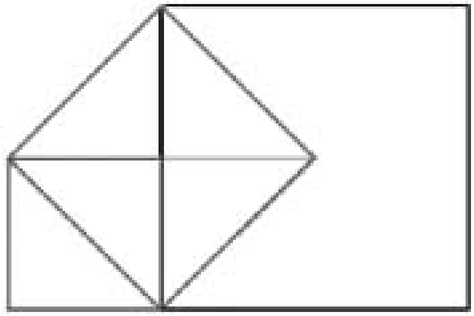


FIGURE 2.3



meanings of “mean” show how you can mean things, outside the dictionary meanings of your language.

So, now that you know what I mean, let’s investigate what these means are.

The same process that took us from the small square to the doubled square is taking us from the doubled square to the quadrupled square. So, what’s this process? It’s doubling, but what is the change, in the line that is the side? Now, this can be a difficult question. If we’re looking in the domain of the sizes of the one-sided length of the original square, we’ve got kind of a domain that we can act in to get magnitudes. We can double lengths, we can triple them, all based on an idea of a unity; quadruple; you can cut things into five pieces; add in half again; take out a seventh. Things like that.

So, let’s see, based on this kind of scalar action, what the relationship is between the original square and the doubled square—that is this mean, this *means* of doubling. You can think about this—I don’t want to use the term—but it’s like a fraction, this relationship between the sides of these squares. And so, okay, if you have a fraction, you’ve got one number in relationship to another.

So, let’s investigate. Since numbers are odd or even, let’s first think about the large square being odd, on its side. **Figure 2.4** shows blocks. There’s a yellow square that’s 5×5 on each side, and it’s kind of extended into this red square, that’s 7×7. So, if this were our scalar relationship of doubling, this large 7-sided square would be twice as big as the yellow. But, how many squares are in a 7×7 square? 49, right? An odd number. That couldn’t be double anything. Any odd-number square is odd; it can’t be double something else.

So, scratch that. Let’s say that both squares are even on each side (**Figure 2.5**). Now, we learn in math class, if you’ve got a fraction that’s even over even, you could cut both the top and the bottom in half. We’ll just look at it physically: This is a relationship of 6 to 8, but it’s also completely the same thing as the relationship between 3 and 4. So—it doesn’t make much sense to think about both squares being even. One of them is really odd, in some regard to the other.

The large square was an odd. So now, we’re left—after [travelling] this road—that the large square must be even, and the small square odd. But, Now, how’s that going to work? Because, if the doubled square is even in regards to the small one—meaning each half of the even square is the same surface as the smaller square; but each half of any even square still must be even on one of the sides, so it’s even! It’s not odd. Neither half of it can be odd.

So, wait. That’s all of our choices, though. That’s all of our options. This whole domain of making magnitude: Nowhere inside of that, existed this relationship that we’re looking for.

So, if you’re a mathematician, you’ve got this drawing of the square, the doubled square, and the quadrupled square. Maybe we’ll just make a new symbol (**Figure 2.6**). Hey! Just

FIGURE 2.4

FIGURE 2.5

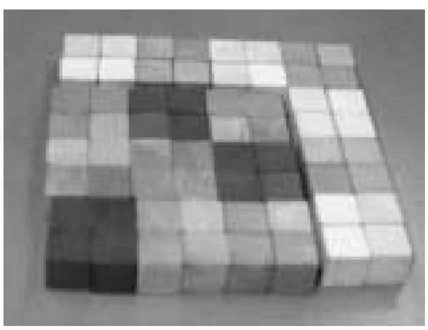


FIGURE 2.6

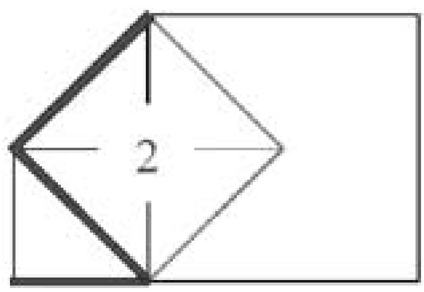


FIGURE 2.7
Doubling of a Square

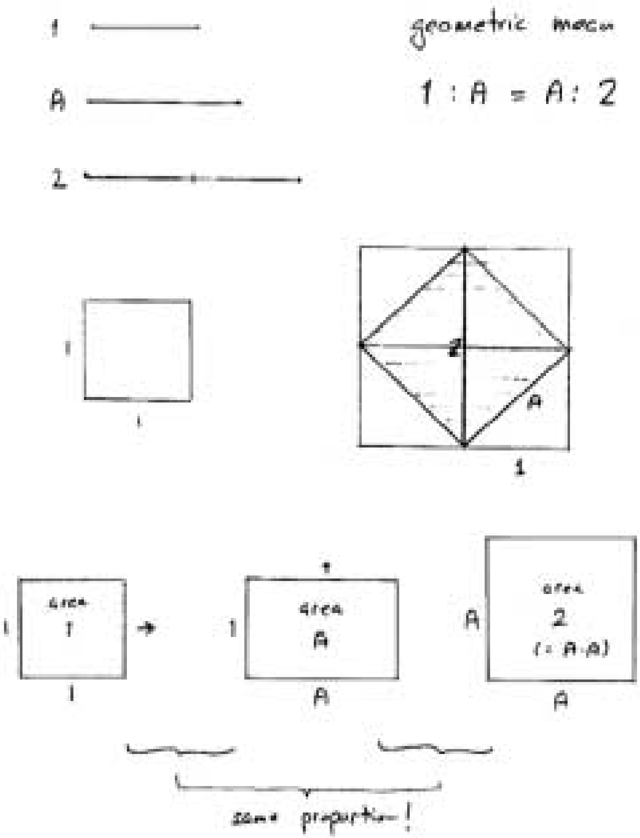
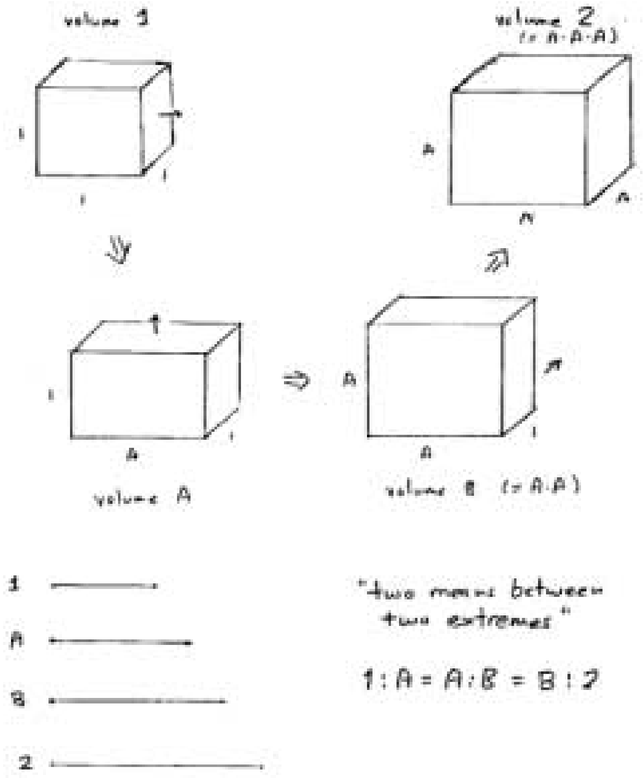


FIGURE 2.8
Doubling of a Cube



bold those lines, and you've got your square root, right? Fine, but now, the $\sqrt{2}$—fine that's just a question. The $\sqrt{2}$ doesn't tell you how big it is, it just tells you it's the "root" or the foundation of a square of 2. And, thinking of that as some sort of real existence is the root of a lot of problems in mathematics. Because it's all meanings of powers and means to make something.

So, just make sure it's hammered in: That this magnitude, this side of the red square, doesn't exist on the number line. If you generate the number line through these simple scalar extensions and contractions.

So our mean doesn't exist in the same domain that the extremes exist in. But, think about it: That's true for any process. How do the extremes appear to you? You sense them: You've got a perception of them. You've got an idea of what is the state of the world, right now? What would I like the state of the world to look like? And you might push and shove on each of these specific properties you're trying to change, but you're going to be completely impotent to change it like that. Like, if you're on a desert island, and you see land over there, you don't see the raft. You've got to know how to make it.

Same with politics. If you look at the political situation, you don't see the Martinists having a meeting. You don't see Warren Buffett meeting with the flabby guy [Schwarzenegger] with the shrunken nuts; you don't see any of these things. You have to really find out, how do you get a crack into this domain, where the generating processes are really occurring?

So, we've got a kind of a peek of this, with the square, with the action of doubling the square. There's this *rotation* involved: going from the base to the diagonal, and then 45 more degrees, to the quadrupled square. And, this is even better illustrated, when we look at actual physical, solid objects. Because, unlike squares, they have a volume. Plato says, in his *Timaeus:* "If the universal frame had been created a surface only and having no depth, a single mean would have sufficed to bind together itself and the other terms; but now, as the world must be solid, and solid bodies are always compacted, not by one mean, but by two. . . ."

Doubling the Cube

So, we'll take the most famous historical example of the specific problem of an absolute necessity for an understanding of means. We'll go to the not-so-far-away, and not-so-long-ago city of Delos, in Greece, which was afflicted by disasters. Plague was ravaging the city; drought was haunting the farmers; unregulated utilities led to power outages across the town; and one of the poorer actors was running for mayor. So, greatly concerned, and not knowing what to do, the leaders of the city decided they would go to their oracle, to ask the gods, "What do we do? Why are we having this plague? What do we do about it?"

And the oracle said, "Tell you what you do: This altar I've got here? I want you to make it twice as big." So, here's what Eratosthenes writes about what happened, then—as reported by Theon of Smyrna: "Their craftsmen fell into great perplexity, in trying to find out how a solid could be made double of another solid. And they went to ask Plato about it. He told that the god had given this oracle, not because he wanted an altar double the size, but because he wished, in setting this task before them, to reproach the Greeks for their neglect of mathematics and their contempt for geometry."

So, setting to work, one of the first things they tried, was doubling the size of each side of the cube. Here's some more Eratosthenes—he says: "The craftsmen doubled each side of the altar, but they seemed to have made a mistake. For when the sides are doubled, the surface becomes four times as great, and the solid eight times. It became a subject of inquiry among geometers, in what manner one might double the given solid, while it remained the same shape. And this problem was called 'the duplication of the cube,' for, given a cube, they sought to double it.

"When all were, for a long time, at a loss, Hippocrates of Chios first conceived that, if two mean proportionals could be found in continued proportion between two straight lines, of which the greater was double the lesser, the cube would be doubled."

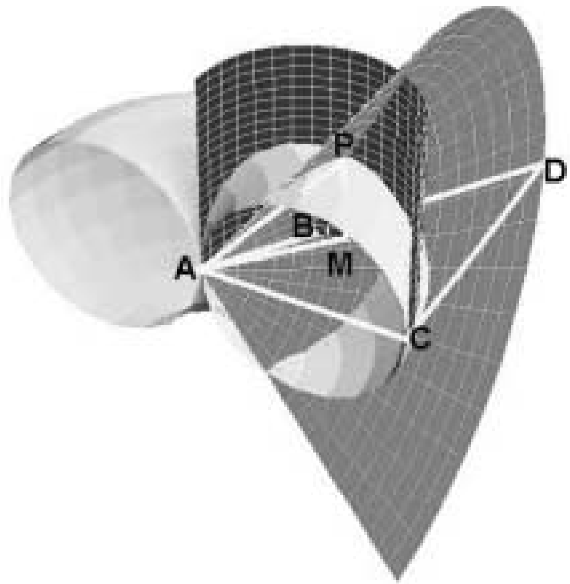
So, actually, think again, what Plato said about this, in terms that, if the universe wants you to make a discovery, it might have to give you a really hard time, to force you to make that discovery. And this is what the people of Delos faced.

Okay, so this idea of finding two means seems, ostensibly, like the problem of doubling the square; but here, we desire two means, instead of just one, between the known extremes.

So, here (**Figure 2.7**), you've got this idea of the mean to double the square; on the bottom of the screen there, you've got the square first being extended along one mode of extension, and then along the other, to get your doubled square. And then (**Figure 2.8**), you've got the cube with the three means, that this magnitude or this relation have done once along one mode of extension; again, along another; and then, finally along the third: You've filled out, and doubled your whole cube.

Sounds simple, but it's not. You can't just draw a diagonal of the cube and get a double—it's over five times as big! Now, you might say, "Why don't you just try it out. Make another one, see if it weighs twice as much. See if it displaces twice as much water, something like that, right?" Well okay, you might get close to it that time, but again, you're completely missing the domain that the answer exists in: the domain of,

FIGURE 2.9
Solution by Archytas



what are the *means* to knowably double this cube, which tells you more about space, than simply making an altar twice as big.

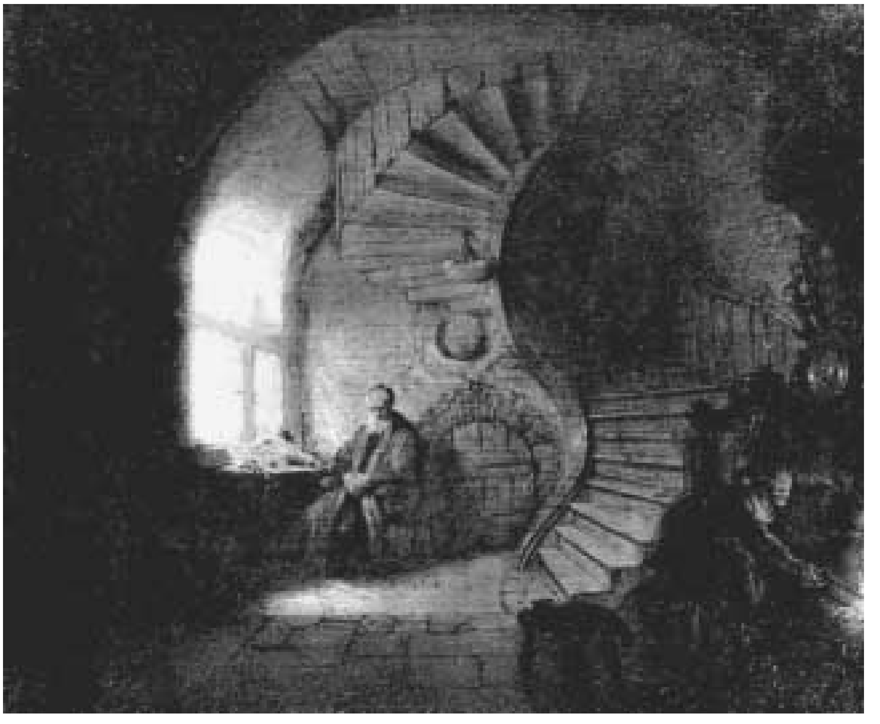
This problem was actually solved not in the domain of the system of extension in which it was posed, but from a higher domain, from the real universe. It was actually figured out by Archytas, the king of a city-state in what's now Italy, who was a collaborator of Plato's. If you haven't seen this before, you might want to imagine some ways of doubling a cube. And then, go ahead and put up the next slide (**Figure 2.9**): Now, you wouldn't just kind of "guess" *that*—pull that out of your hat, and let's see if that doubles the cube. What Archytas has here, is he has half of a cylinder; he's got a circle, that's kind of dancing and spinning around, sweeping out a torus; he's got a line that's circling about, making a cone. And these things are all coming together. Archytas actually uses musical language to describe these things coming together to make a relationship, in the same terms as a musical relationship. It's like a three-voice fugue, hitting at a singularity in the mind of the composer.

We're not going to go into the details of exactly how this doubles the cube, but there's a couple of things that have to be pointed out about it: That, first of all, this solution lies outside of the domain in which the problem was posed. You've got a cube; you want it twice as big. Where did *that* come from? It lies outside that domain, in the same way that Gauss, in his elaboration of the complex domain, went outside the domain of algebra, when he had to answer a question about algebra. This gets you out of the senses, and into the invisible, internal relations of the universe; and what we're seeing—this self-elaborating, rotational aspect, even here, which later gets developed by Bernoulli in a different treatment of power.

Now, another meaning of Archytas' finding of the two means, is that, it is itself a mean: a mean between our sensual understanding, and then the idea of the generative domain of powers and means that was living in Archytas' mind. This image of Archytas' is a means to understanding an actual idea, which you can't see.

Now, this generation behind the scenes, so to speak, of this Sensorium, is not performed by extensions in the Sensorium; and, although we can—yes—make a doubled cube with that, this exists only in the mind. It is a thought-object.

FIGURE 2.10
Rembrandt's 'The Philosopher'



The Creative Hypothesis

It's precisely this reasoning process employed by Archytas, that leads us, as a mean, from our senses, to the universe. And, this is taken up and elaborated by Plato, in Book 6 of his *Republic,* in which he introduces the idea of a division of objects of thought: of one being the visible, and the other the intelligible. Which he then further subdivides each of the two, between the more obscure part, and the clearer part. So, for the visible, for example, you have shadows, reflections, hazy images of things; and then you have the objects, of which these images are the likeness.

In the domain of the intelligible, the first, murkier division, is "understanding." Here's how Plato's Socrates described it—he says of it: "For I think you are aware that students of geometry and reckoning, and such subjects, first postulate the odd and the even, and the various figures, and three kinds of angles, and other things akin to these in every branch of science; regard them as known, and treating them as absolute assumptions, do not deign to render any further account of them, to themselves or others, taking it for granted they are obvious to everybody. In this way, understanding does not proceed to a first principle, because of its inability to extricate itself from, and rise above, its assumptions."

So, we interpret our senses, based on our understanding of how we believe the universe to work, help us to make sense of this mess of light and sounds and everything else that Merv is talking about it. But, how do we get above these assumptions? The higher domain is that which reason itself takes hold of by the power of dialectic, treating its assumption, not as absolute beginnings, but literally as hypotheses, underpinnings, footings, and springboards, so to speak.

So, we have images, objects, understanding, and reason.

Then, Glaucon, whom Socrates is speaking with, says this: "I think you call the mental habit of geometers and their like, 'understanding,' and not 'reason'; because you regard 'understanding' as something intermediate between opinion and reason." "Intermediate": Here you have a mean, again. Again, as a thought-object. Understanding is the mean between your senses and actual reason.

So, this where the passion of being human comes in. Understanding is based on principles, that you use to comprehend the real nature of the universe, but you can't have new thoughts of understanding alone. Reason picks up, where the mean of understanding ends; but how?

The act of reason, the hypothesis, takes us directly to our immortality, to the "undiscovered country, from whose bourne no traveller returns" (see **Figure 2.10**). This puzzles the will. There's no formula, or comfort of the senses, or of understanding here. But it's precisely our human passion to "go there," that allows us to live as human beings in a domain unreachable by animals. And without this determined passion, to seek for, and adhere to the truth, we'll be unable to live as humans, and most of us will die as animals. And you, personally, have to develop, and act, on that passion.

Thank you.