
BENJAMIN BANNEKER: PROPORTIONALITY AND THE BENEFIT OF THE OTHER

by Pierre Beaudry, 3/17/17

*“Once you know how the universe is composed,
it helps you to compose with it.”*

Dehors Debonneheure

INTRODUCTION



Benjamin Banneker was an African-American inventor, poet, mathematician, and astronomer mostly known for having designed the plan of the city of Washington DC with the French architect, Pierre L'Enfant, under the supervision of George Washington.

What is little known about him, however, is the fact that he had made the fundamental Leibnizian discovery that the principle of proportionality between reason and power was congruent with arithmetic, politics, and the Peace of Westphalia.

Figure 1 [Benjamin Banneker](#), (1731-1806)

You don't have to take my word for it; you can prove it by constructing the proof yourself. As Lyn once said: "*Believe nothing that for which you cannot give to yourself a constructive proof.*"

Banneker discovered that the *underlying ordering principle* of the four functions of arithmetic; that is, addition, subtraction, multiplication and division, was congruent with the political courage required for an individual to free himself from the shackles of propitiating a political authority such as Thomas Jefferson.

I reproduce below the original correspondence between Banneker and Jefferson, as well as the pedagogical of the [BANNEKER PUZZLE OF PROPORTIONALITY](#) that I published on this website on November 7, 2003. See also: [PIERRE L'ENFANT AND BEJAMIN BANNEKER PLAN FOR WASHINGTON DC](#). But, let's tackle the pedagogical nature of the puzzle on proportionality, first.

1. RELIVING THE DISCOVERY OF BANNEKER'S PUZZLE OF PROPORTIONALITY

"DIVIDE 60 INTO FOUR SUCH PARTS, THAT THE FIRST BEING INCREASED BY 4, THE SECOND DECREASED BY 4, THE THIRD MULTIPLIED BY 4, THE FOURTH PART DIVIDED BY 4, THAT THE SUM, THE DIFFERENCE, THE PRODUCT, AND THE QUOTIENT SHALL BE ONE AND THE SAME NUMBER."

**"First part 5.6 increased by 4 = 9.6
Second part 13.6 decreased by 4 = 9.6
Third part 2.4 multiplied by 4 = 9.6
Fourth part 38.4 divided by 4 = 9.6."**

Do you know how Banneker was able to discover the principle underlying that amazing unity of thought? Try to discover that principle by yourself before you read the rest of this report.

Imagine that one day, Benjamin Banneker, who was also a clockmaker, and, therefore, knew of the importance of time in all matters of discovery, was meditating on the nature of numbers and found himself totally perplexed. He had asked himself: "*Why are there no more than four types of elementary arithmetical operations; that is, addition, subtraction, multiplication, and division?*" He was puzzled by these simple mental operations, of which there could be no more than four. He began to investigate what it was that held those four mental functions together, if anything.

After a few moments, he began to realize that the answer was not mathematical. He figured out that there had to exist some kind of unity of relationship, some epistemological reason that bound them together as a one; otherwise, how could anyone explain the harmony that existed among the stars in the heaven. How could God have created the universe without the required harmony and proportion in the minds of human beings as well? So, what was that epistemological unity of action that related those operations together?

Treating numbers not as things in and of themselves, but as shadows of something else cast on the dimly lit wall of Plato's Cave, Banneker decided to work his way backward from the shadows, and tried to reach the truth, by inversion into the higher source of light underlying their boundary conditions, projected from outside of the Cave.

"Why were there only four arithmetical operations and what was holding them together," he kept asking himself? He first looked at their shadows, individually, and he could not see anything. In fact, the more he looked at them, separately, the more perplexed he became. He began to realize that their unity could not come from within any of these operations as such, but could only be derived from a higher ordering principle that united them into a single unity of

composition, a principle similar to that of Plato's ontological principle of the One and the Many.

Then, he started looking at them two by two in a three-fold manner; and that is when he began to see the first relationship emerge, which he thought was important. He discovered that addition was the inverse of subtraction just like multiplication was the inverse of division in the same proportion that reason was to power. What was the significance of these inversions?

Banneker continued to try to resolve the puzzle, and he saw that the differences between these four operations were all similar and meaningful, when they were considered together as inversions of one another; but that they were all different and meaningless, when they were considered individually and separately! He was in awe before that strange fact, and became filled with joy when he discovered that the whole thing could only be understood, and be made sense of, when the four operations were actually bounded together as a single process that was similar to the process of making political decisions. Banneker had not just discovered the boundary conditions of knowledge, he had discovered the principle that related to war and peace; at least the proportional extent of it. He had discovered the same epistemological gem of proportionality that Leibniz had discovered before him, which is that:

"All beauty consists in a harmony and proportion; the beauty of minds, or of creatures who possess reason, is a proportion between reason and power, which in this life is also the foundation of the justice, the order, and the merits and even the form of the Republic, that each may understand what he is capable, and capable as much as he understands. If power is greater than reason, then the one who has that is either a simple sheep (in the case where he does not know how to use his power), or a wolf and a tyrant (in the case where he does not know how to use it well). If reason is greater than power, then he who has that is to be regarded as oppressed. Both are useless, indeed even harmful. If, then, the beauty of the mind lies in the proportionality between reason and power, then the beauty of the complete and infinite mind consists in an infinity of power as

well as wisdom, and consequently the love of God, the highest good, consists in the incredible joy which one (even now present, without the beatific vision) draws out of the contemplation of that beauty or proportion which is the infinity of omnipotence and omniscience." (Quoted from *The Political Economy of the American Revolution*, EIR, 1995, p. 215-16.)

Banneker was overjoyed by his discovery and started to laugh so loud that everyone around him thought he had gone mad. He had discovered that numbers were nothing but expressions of proportional relationships among the developing powers of the human mind, as different from the animal, and that these relationships related to different forms of mental action, different powers that the mind had received as if they were gifts from God, because their relationship resembled the process of Creation.

Then, like Nicholas of Cusa did when he discovered the isoperimetric principle within a *minimum-maximum* relationship, Banneker chose a *self-generating minimum solution*. He imagined that if he could find the answer with a *minimum*, he could apply it to any other number, including a *maximum*. He chose **4** to be the minimum number equal to the sum of **4**, equal to the difference of **4**, equal to the product of **4**, and equal to the quotient of **4**. So, Banneker was able to derive the following *minimum* self-generating solution:

The sum is $0 + 4 = 4$

The difference is $8 - 4 = 4$

The product is $1 \times 4 = 4$

The quotient is $16 \div 4 = 4$

This gives you a sum of all of these operations which is **$16 + 1 + 8 + 0 = 25$** . Banneker then realized that, in order to confirm that his hypothesis worked for any number, or any political or strategic situation, he needed to discover the **PROPORTIONALITY** between the first two cases. That was the leap he had to make in order to reach the higher domain he was trying to reach; and that is:

**60 is to 9.6 as 25 is to 4,
or the proportion
 $60 : 9.6 :: 25 : 4 = 6.25!$**

And there you have the unique proportional value that Banneker was looking for. The proportion for all possible cases, *minimum* or *maximum*. No other proportion would satisfy him. In other words, apply the proportional result of **6.25** to any value, whatsoever, and the *BANNEKER PUZZLE* can be solved for any given number.

2. HOW TO CONSTRUCT THE BANNEKER EXPERIMENT YOURSELF

Take any arbitrary number, say, **50**, from which you want to find four different parts, which shall satisfy the **BANNEKER PROPORTIONALITY**.

Divide number **50** by the ratio of the proportion **6.25**; that is, $50 \div 6.25 = 8$. This number **8** is the one and the same number which will be the result of an **INCREASE** by **4**, of a **DECREASE** by **4**, of a **MULTIPLE** by **4**, of a **DIVISION** by **4**, and whose sum will total **50**.

Now, proceed by the same process of inversion, for each and all four operations. This process might be a little difficult for you if you are not used to making inversions. Whatever happens, don't get impressed by numbers. They are merely shadows of something else; and it is that something else that you are looking for. So, be patient and keep looking at what your mind is doing, even if at first you don't understand the process. Ask yourself the following questions:

What part of **50** divided by **4** will give you **8**? The answer is the inverse; that is, $8 \times 4 = 32$.

What part of **50** multiplied by **4** will give you **8**? The answer is the inverse; that is, $8 \div 4 = 2$.

What part of **50** subtracted by **4** will give you **8**? The answer is the inverse; that is, $8 + 4 = 12$.

What part of **50** added to **4** will give you **8**? The answer is again the inverse; that is, $8 - 4 = 4$.

Thus, the four parts you were looking for are: $32 + 2 + 12 + 4 = 50$.

Now that you have constructed this puzzle by yourself, take it to the next higher level. Ask yourself: "How does that sort of epistemological proportionality between reason and power relate to music?" I'll give you a hint. Now that you have seen how to construct the Banneker puzzle with numbers **25** and **50**, try it by continuing the regular series, of **75**, **100**, **125**, etc., and see what you get.

3. HOW THE BANNEKER PROPORTION RELATES TO THE C-256 SERIES

After constructing a few more cases of that series, you will notice that, not only the proportional ratio of **6.25** could be applied to any number whatsoever, but that a continuous series of products of the multiples of **4**, such as **25**, **50**, **75**, **100**, etc., relates to the musical series of equal tempered or harmonic pitch tuned at C-**256 Hz**.

All of the intervals of the musical octave C-**256** – C-**512** are held together by **12** intervals: C-**256**, C#-**272**, D-**288**, Eb-**304**, E-**320**, F-**340**, F#-**360**, G-**384**, Ab-**408**, A-**432**, Bb-**456**, B-**484**, C-**512**. It then becomes clear that the musical intervals and the Banneker proportional value of **6.25** are ordered from a similar quadratic and biquadratic series within the power of two.

		F#-360	
	Eb- 304	364	
	308	368	
	312	372	A-432
C-256	316	376	436
260	E-320	380	440
264	324	G-384	444
268	328	388	448
C#-272	332	392	452
276	336	396	Bb-456
280	F-340	400	460
284	344	404	464
D-288	348	Ab-408	468
292	352	412	472
296	356	416	476
300	F#360	420	480
Eb- 304		424	B-484
		428	488
		A-432	492
			496
			500
			504
			508
			C-512

Comparison of equal temper pitch with harmonic pitch, with C = 256Hz

Note	Equal	Harmonic
C	256	256
D	287	288
E	323	320
F	342	341
G	384	384
A	431	427
Bflat	456	448
B	483	480
C	512	512

Moreover, the differences in the values among all of the intervals of both the twelve tone series and the Banneker series are also ordered according to the same increasing incremental values of **16, 20, 24, 28**, etc.

Figure 2

<https://howardat58.wordpress.com/category/musical-scales/>

Therefore, Banneker's method of discovery is of a higher epistemological quality than is generally attributed to him by mathematicians who use the Single Position method. Banneker's method of proportionality is better because it uses the Cusa-Leibniz *minimum-maximum* form of hypothetical proportionality which applies universally to all functions of reason and power relationship as opposed to a mere arithmetical correction factor.

4. THE POLITICAL GENIUS OF BANNEKER AND OF THE AMERICAN CONSTITUTIONAL REPUBLIC

*'View yon majestic concave of the sky!
Contemplate well, those glorious orbs on high-
These Constellations shine, and Comets blaze;
Each glitt'ring world the Godhead's pow'r displays!'*

Banneker, *Almanac for 1794*.

It was through the completion of the plan of the city of Washington that Banneker became the living proof that the popular prejudices of his time could be changed, and that the city of Washington D.C. could truly become the city where all men, regardless of color, religion, or creed, could be able to live freely and participate in demonstrating the truth of the Declaration of Independence, that "all men are endowed with certain unalienable rights."

Nothing can be more fitting, in showing the compelling reality of this inalienable necessity of freedom, than to restate the quality of cognitive courage and insight that Benjamin Banneker had demonstrated when he wrote to Thomas Jefferson, urging him to free himself of his own enslavement. This letter of August 19, 1791 reflects fully the idea of proportion between the passion of reason and the political power of ideas that Lyndon LaRouche has been advocating as necessary

in political organizing. It is also a beautiful example of Banneker's method of inversion applied to the principle of the Peace of Westphalia of 1648, the principle of the *Advantage and Benefit of the other*. Here is the gist of Banneker's masterful intervention with Jefferson. Banneker wrote in part:

"...Sir, I have long been convinced, that if your love for your Selves, and for those inestemable laws which preserve to you the rights of human nature, was founded on Sincerity, you could not but be Solicitous, that every Individual of whatsoever rank or distinction, might with you equally enjoy the blessings thereof, neither could you rest Satisfied, short of the most active diffusion of your exertions, in order to [change] their promotion from any State of degradation, to which the unjustifiable cruelty and barbarism of men may have reduce them.

"Sir, I freely and Cheerfully acknowledge, that I am of the African race, and in that colour which is natural to them of the deepest dye, and it is under a Sense of the most profound gratitude to the Supreme Ruler of the universe, that I now confess to you, that I am not under the State of tyrannical thralldom, and inhuman captivity, to which too many of my brethren are doomed; but that I have abundantly tasted of the fruition of those blessings which proceed from that free and unequalled liberty with which you are favored and which I hope you will willingly allow you have received from the immediate hand of that Being, from whom proceedeth every good and perfect gift.

"Sir, Suffer me to recall to your mind that time in which the Arms and tyranny of the British Crown were exerted with every powerful effort, in order to reduce you to a State of Servitude, look back I entreat you on the variety of dangers to which you were exposed, reflect on that time in which every human aid appeared unavailable, and in which even hope and fortitude wore the aspect of inability to the Conflict, and you cannot but be led to a Serious and grateful Sense of your miraculous and providential preservation; you cannot but acknowledge, that the present freedom and

tranquility which you enjoy, you have mercifully received, and that it is the peculiar blessing of Heaven.

"This Sir, was a time in which you clearly saw into the injustice of a State of Slavery, and in which you had just apprehensions of the horrors of its condition, it was now Sir, that your abhorrence thereof was so excited, that you publicly held forth this true and invaluable doctrine, which is worthy to be recorded and remember'd in all Succeeding ages. "We hold these truths to be Self evident, that all men are created equal, and that they are endowed by their creator with certain unalienable rights, that among these are life, liberty, and the pursuit of happiness."

"Here Sir, was a time in which your tender feelings for your selves had engaged you thus to declare, you were then impressed with proper ideas of the great valuation of liberty, and the free possession of those blessings to which you were entitled by nature; but Sir how pitiable is it to reflect, that although you were so fully convinced of the benevolence of the Father of mankind, and of his equal and impartial distribution of those rights and privileges which he had conferred upon them, that you should at the Same time counteract his mercies, in detaining by fraud and violence so numerous a part of my brethren under groaning captivity and cruel oppression, that you should at the Same time be found guilty of that most criminal act, which you professedly detested in others, with respect to yourselves.

"Sir, I suppose that your knowledge of the situation of my brethren is too extensive to need a recital here; neither shall I presume to prescribe methods by which they may be relieved; otherwise than by recommending to you and all others, to wean yourselves from these narrow prejudices which you have imbibed with respect to them, and as Job proposed to his friends "Put your Souls in their Souls stead," thus shall your hearts be enlarged with kindness and benevolence toward them, and thus shall you need neither the direction of myself or others in what manner to proceed

herein..." (Benjamin Banneker, August 19, 1791 [Letter to Thomas Jefferson.](#))

Thus, Benjamin Banneker was not making the case only for his "black brothers", but he was also making the case to free the Jeffersons of the world from their own attachments to slavery. This was Banneker's most passionate moment of the sublime. He rightly saw in Jefferson a slave of his own "*narrow prejudices*," and was trying to help him to overcome that condition by showing him how to become a true free human being. In the process of accomplishing that task, *freeing yourself by freeing others*, Banneker transformed himself and demonstrated the true nature of the American Constitutional Republic; because, in addressing Jefferson, as he did, he broke with his own shackles of mental fears.

Thus, Banneker set the example for all of us, in *freely and cheerfully acknowledging* that in science, as in politics, the essential is to passionately and proportionately experiment with the *Benefit of the Other*, even when the other does not respond in kind. That is the reason why politics and science are so much fun: because the reward is in the giving.

However powerful this exhortation may have been, it was replied to by Jefferson as sincerely as could be admitted to appear under the purview of public opinion. However, his response was as phony as a three dollar bill. The following reply shows clearly how Jefferson was not able to deal with the question at the level that Banneker was addressing it. Jefferson's response was as follows:

"Philadelphia Aug. 30. 1791.

Sir,

I thank you sincerely for your letter of the 19th. instant and for the Almanac it contained. no body wishes more than I do to see such proofs as you exhibit, that nature has given to our black brethren, talents equal to those of the other colours of men, & that the appearance of a want of them is owing merely to the degraded condition of their existence both in Africa & America. I can add with truth that no body wishes more ardently to see

a good system commenced for raising the condition both of their body & mind to what it ought to be, as fast as the imbecillity of their present existence, and other circumstance which cannot be neglected, will admit. I have taken the liberty of sending your almanac to Monsieur de Condorcet, Secretary of the Academy of sciences at Paris, and member of the Philanthropic society because I considered it as a document to which your whole colour had a right for their justification against the doubts which have been entertained of them. I am with great esteem, Sir, Your most obedt. humble servt.

Th. Jefferson.” (Thomas Jefferson’s [Letter to Banneker](#))

What is there to say about such an answer? First of all, it is absolutely politically correct. Secondly, the response is less interesting in what it said, than in what it did not say. What it said was simply wrong. Banneker was not exhibiting “*equal talents to those of the other colors of men*”. Banneker was actually exhibiting superior creative talents of cognition than most people are endowed with, including Jefferson himself. And the reason this is the case is because of *what is not there*.

What is missing in Jefferson, and that is the crucial point to be made here, is the ability to internalize in his heart the universal condition of mankind. He is missing *AGAPE*, love of mankind. That is the quality that Banneker is trying to locate in Jefferson, when he says “*Put your soul in their soul’ stead.*” But Jefferson is incapable of responding to this call for selfless love and universal self-consciousness. He cannot internalize the simple human act of taking the soul of another person into his own soul.

The problem here is that southern aristocrats are trained not to internalize someone else’s soul because of who they are. They are incapable, by nature, of doing something *for the benefit of others without expecting anything in return*. That is what is so beautiful about Banneker’s clinical approach to the subject matter of *proportionality between reason and power*. Unless you are capable of taking someone else in your heart, in this manner, you don’t have the power of being a true and complete human being. That is what Banneker understood when

he wrote that unless “*you wean yourselves of those narrow prejudices*” your hearts are incapable of being “*enlarged with kindness and benevolence towards them.*”

Indeed, Jefferson was an unhappy and divided person. On the one hand, he was severely influenced and controlled by the land aristocracy of the two Carolinas, and by the British oligarchs of Boston, such as the traitor and assassin of Alexander Hamilton, Aaron Burr. However, much like his close friend Marquis de la Lafayette, he was also a patriotic revolutionary, and was fully committed to the sovereign nation state. But, because of this aristocratic-romantic flaw, Jefferson had to be kept under close watch, by Washington, Franklin, and Hamilton.

On the one hand, the reply of Jefferson does raise the question of whether he was truly able to write the Declaration of Independence, as he is alleged to have done. On the other hand, Benjamin Banneker's letter does show that he did have the required quality of a “beautiful soul” required to accomplish such a task; that is, the quality of humanity described by Plato as corresponding to the condition of the “*Golden Soul.*”

It is for these reasons, exhibited by Benjamin Banneker, in that extraordinary letter to Thomas Jefferson, that Washington D.C. was created, and for these reasons that the fight must be fought, for the betterment of mankind, and for no other reasons. Thus, as Leibniz discovered, the process of change must be located in beauty. As he said:

"All beauty consists in a harmony and proportion; the beauty of minds, or of creatures who possess reason, is a proportion between reason and power, which in this life is also the foundation of the justice, the order, and the merits and even the form of the Republic, that each may understand what he is capable, and capable as much as he understands."
(Quoted from *The Political Economy of the American Revolution*, EIR, 1995, p. 215.)

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