ELECTRONIC AND ATHENIAN DEMOCRACY

PAUL COCKSHOTT

1. VOTING MACHINES

We are used to the notion that the Greeks pioneered almost everything: Philosophy, abstract maths, steam engines, computers [1], Fig 3.. But it comes as a surprise to hear that they also invented voting machines. I would suggest that the machinery they used was based on certain scientific principles that have since been almost forgotten. In many ways their machinery was more advanced as a representative mechanism than what we use today. In the museum of the Agora in Athens there are the remains of ancient voting machines the *kleroterion*.

Made of marble they had columns with narrow slots for tokens or cards, (Fig 1).

We are used to hearing of voting machines in the US. Their use in recent elections has been controversial. What is surprising is that voting machine technology is so old. Surprising Function The greater surprise comes from realising how they worked. They were not used to vote for candidates, but to randomly select the voters themselves to stand on the council or boule of the *polis*, or for the *dikastai* or jury. There were no candidates. It appears that citizens went up to the machine
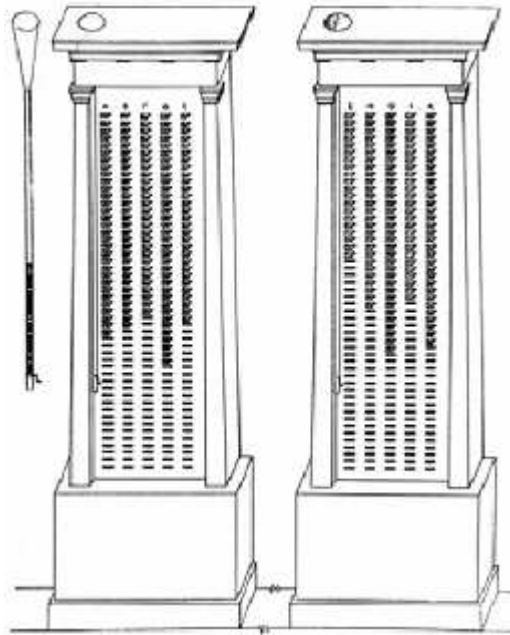

FIGURE 1. A reconstruction of the *kleroterion*

1

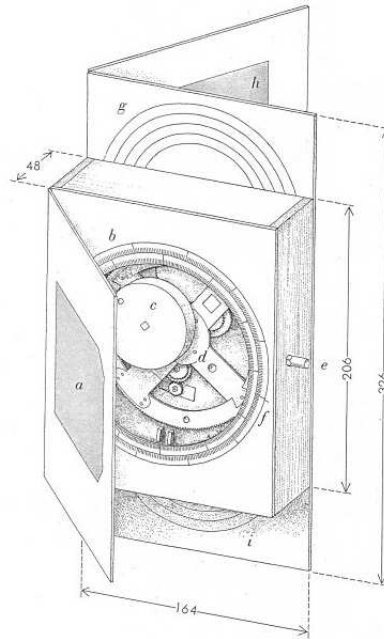FIGURE 2. Bronze voters id card used in a kleroterion.

FIGURE 3. Antykera device, an ancient Greek computer, reproduced from [1].

and inserted their id card. Once the columns were full, the Archon operated the crank, and was served up either a black or a white marble. On the basis of the colour entire rows of cards were either rejected, or those with the cards were selected to be on the jury or city council.

At this point some officials were given allotment tokens of pottery with the office and details painted on prior to firing. The tokens were then broken in half. It is assumed that half was retained by the selected official as a token of office. The other half was retained by the archons as proof against counterfeiting. Only the original and its stub, when brought together would match exactly. Note the similarity of this to the tallia divinda used by the British treasury for tax raising and accounting prior to the 19th century[3, 4].

Figure 2 shows one of the id cards used in the machines. The card was retained by the *archon* when a citizen was alloted to office. They only got to get paid if they fullfilled the duty at which point they could recover the card.

2

2. Institutions of classical democracy

The machinery was arguably a much more scientific and accurate representative mechanism than we currently have. It ensured that the council was a statistically representative sample of the citizen body.

Contrast that with our parliaments which on grounds of gender, class and race are grossly unrepresentative of the voters. Aristotle Aristotle (Politics, and Athenian Constitution), argued that there were three key principles to democracy

(1) The sovereign assembly of the citizens which decides major questions.The first and most characteristic feature of demokratia was rule by the majority vote of all citizens. This was generally by a show of hands at a sovereign assembly or eklesia. The sovereignty of the demos was not delegated to an elected chamber of professional politicians as in the parliamentary system. Instead the ordinary people, in those days the peasantry and traders, gathered together en masse to discuss, debate and vote on the issues concerning them.

(2) There was no government as such, instead the day to day running of the state was entrusted to a council of officials drawn by *lot*. The council had no legislative powers and was responsible merely for enacting the policies decided upon by the people.

(3) The last important institution were the peoples law courts or dikasteria. These courts had no judges, instead the dicasts acted as both judge and jury. The dicasts were chosen by lot from the citizen body, using a sophisticated procedure of voters tickets and allotment machines, and once in court decisions were taken by ballot and could not be appealed against. It was regarded by Aristotle that control of the courts gave the demos control of the constitution.

He further argued that states based on elections rather than lot were not democracies but aristocracies, He said the principle of deliberate selection results in rule by the wealthier and better educated candidates. Distinguishing feature of democracy was that the poor actually ruled the state.

2.1. British System aristocratic in Aristotles terms.

The current electoral system descends from the practice of electing knights of the shire - election of minor aristocrats to Commons alongside the major ones in the Lords.

The commons remains aristocratic in Aristotles terms, due to its preponderance of lawyers and businessmen. Arguably there was no alternative in 19th century when reforms began. Now options open up.

3. Modern options

With modern technology the original principles of democracy can be restored. If people can vote electronically on Big Brother, they could also do so on critical national questions as the citizens did in Athens

Examples:

- Peace or war,
- level of national budget,
- levels of taxation.

3.1. **Terms of choice.** Need for protocols for questions to be put to the vote, and for structure of questions. For example: Should Education Spending

(1) go up 1%
(2) stay the same
(3) go down 1%

Average vote gives a definite real valued answer for the change in expenditure.

3.2. **Lot and Lords Reform.** Consider Lords reform could one not have the lords replaced by an Athenian style boule of citizens drawn randomly to serve for a year. The technology for this is in large measure already installed in the lottery machines put in place by Camelot.

There is much controversy over the biometric id cards proposed by the Home Office. If such cards were used in conjunction with the lottery to allow you be be a Lord or Lady for a year, then they might be seen as a means of controling the government, rather than being feared as the reverse.

Aristotle, describing the democracies of his day was quite explicit about the fact that democracy meant rule by the poor. Countering the argument that democracies simply meant rule by the majority he gave the following example: "Suppose a total of 1,300; 1000 of these are rich, and they give no share in office to the 300 poor, who are also free men and in other respects like them; no one would say that these 1300 lived under a democracy" (Politics 1290). But he says this is an artificial case, "due to the fact that the rich are everywhere few, and the poor numerous."

As a specific definition he gives: " A democracy exists whenever those who are free and are not well off, being in a majority, are in sovereign control of the government, an oligarchy when control lies in the hands of the rich and better born, these being few".

REFERENCES

[1] D.J. de Solla Price, An Ancient Greek Computer, Scientific American, June 1959, 60-67.
[2] Aristotle The Politics, also The Athenian Constitution
[3] R. Wray, The Neo Chartalist Approach to Money, working paper 10, Center for Full Employment and Price Stability, 2000.
[4] P. Cockshott, Symmetries and Exchange Relations, Politica e Cultura, primavera 2005, 279-304.
[5] John Burnheim Is Democracy Possible.
[6] Moses Finley, Democracy Ancient and Modern
[7] G.E.M. de Ste.Croix , The Class Struggle in the Ancient Greek World

UNIVERSITY OF GLASGOW, DEPARTMENT OF COMPUTING SCIENCE
E-mail address: wpc@dcs.gla.ac.uk