Random Thoughts on “Birth and Death”

KENNETH J. ARROW

Subject: “Birth and Death”

From: Kenneth J. Arrow

Date: 06/06/2016, 06:28

To: Partha Dasgupta

Hi Partha,

I’m still working my way through your chapter. It is entirely too stimulating (there are some other papers I should be completing); I stop and try to calculate a model stemming from your work. I attach a few scattered thoughts; I will have more to say when we meet.

As ever,

Ken

Subject: “Birth and Death”

From: Kenneth J. Arrow

Date: 06/06/2016, 06:56

To: Partha Dasgupta

Hi Partha,

The “thoughts” (about a day’s work) seem to have disappeared. I am a bit upset. I have a new operating system in old computer; that may be the problem.

I can reconstruct the arguments all right, but I have some more urgent things to do until next weekend.

Hasta la vista.

Ken

Subject: Random Thoughts on "Birth and Death"

From: Kenneth J. Arrow

Date: 06/06/2016, 09:04

To: Partha Dasgupta

SOME RANDOM THOUGHTS ON "BIRTH AND DEATH"

- I. In discussing a preference structure, I always want to find a set of decisions that have to be made. I have always found difficulty in thinking about population because I couldn't identify clearly the decision. If the choice is between existence and non-existence, one alternative refers to a person but the other refers to—what? In the standard evaluations of health, we use as a real-life measure the choices between jobs with differing fatal accident rates and correspondingly different wages. A single individual is being compared in two different circumstances.
- II. James Joyce refers to, "the God-possibilized individuals whom we nightly impossibilize." Here there does seem to be a choice—by the potential parents. Your "generation-relative utilitarianism" may point in this direction. But, of course, in that case, it is not (at least, not entirely) the utility of the potential person that is relevant; there is a direct (instrumental) utility to the parents.
- III. Sophocles on C^S: Glancing at your chapter raised vague memories of a chorus from one of Sophocles' plays about Oedipus and his children. It occurs in, "Oedipus at Colonus," about two-thirds of the way through. This is Gilbert Murray's translation

Not to be born, by all acclaim,
Were best; but once that gate be passed,
To hasten thither whence he came
Is man's next prize—and fast, Oh fast!
For, once he has unloosed his hand
From Youth and Youth's light vanities,
What blow can from his path be banned?
What griefs will not be surely his?
Strife, envy, falseness, blood and hate,
Till, last, the curse of curses, lone,
Despised, weak, friendless, desolate,
Old age hath claimed his own.

This sets a high (literally, infinite) value for C^S , though it is connected with the decay due to age, and so may point to a value depending on both age and the technical ability to mitigate consequences.

Paul Baran, who was a colleague of mine in the Stanford Economics Department for 14 years after I joined in in 1949, had a semantically and logically complex variation on this thought. "Best of all never to have been born! But who has such luck? Not one in twenty"

- IV. C^S in previous periods: If we go back even a few thousand years and certainly if we go to a pre-agricultural era or even parts of the world today, we observe consumption levels vastly lower than even current average world levels. Either we have to say that most of mankind for most of its existence should not have lived or we have to make utility a relative concept, an idea you briefly raise and shrink from (or at least say that other ethicists would disapprove of).
- V. A major issue to me is the specification of the production conditions. As I say, I have not completed my reading of your chapter by a long shot, but you have used the Sidgwick–Meade model of a fixed amount of goods available for consumption. As an old saying has it, "Man is born with a mouth—and two hands." (I may add, "and a brain.") Even in a hunter-gather society, you can collect more fruit or hunt more animals with a larger population. If N is population (assumed equal to labor force) and C is per capita consumption, then the constraint is,

$$NC = F(N, K),$$

where F is concave and homogeneous of degree 1. If we maximize $NU(C)$ with this constraint, we get,

$$[EU(C)/EC] s_K = 1, \text{ where } s_K = F_K K/F,$$

the share of rents in total output. [Note: EU/EC is the elasticity of U with respect to C . Meade and Sidgwick assume N plays no role in production, so that for them, $s_K = 1$. It not hard to see that, if technological progress is land-augmenting, then, at the optimum, N increases in proportion to land productivity while C remains constant (generalizing a conclusion that you had already come to).

The conclusions are not very institutive and may cast doubt on the utilitarian criterion.

This doubt is, to my mind, increased by one final observation. Let us specialize the production assumption by assuming that F is Cobb-Douglas, so s_K is a constant, say, a . It can be shown that EU/EC is a decreasing function of C in the interval beginning at c^S and ending with the C -value where $EU/EC = 1$. Hence C *decreases* as a decreases to 0, approaching c^S . This is especially odd, since a small a means that output is mostly determined by human effort and little sensitive to nature. Incidentally, there is a discontinuity at $a = 0$. At that point, per capita consumption is determined by production conditions. If this level is above the zero-utility level, then N will be infinite.

I really don't know how to interpret this last conclusion. There may be something wrong in the model, or, as I think, something wrong in the Sidgwick–Meade criterion.

Figure 0.1 Kenneth J. Arrow and Partha Dasgupta, Nässlingen Island, Sweden, September 1994

Time and the Generations