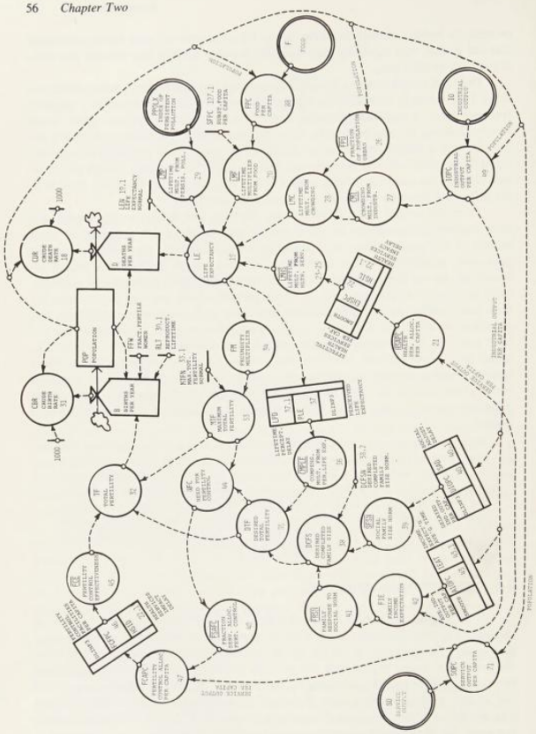

Figure 2-21 DYNAMO flow diagram—one age level

Year	Population (billions)	Source
1900	1.61	Carr-Saunders 1936, p. 42
1920	1.86	U.N. 1966, p. 133
1930	2.07	
1940	2.30	
1950	2.52	
1960	3.00	
1971	3.73	USAID 1971, p. 210
1970	3.59	U.N. 1966, p. 134 ("medium variant" projections)
1980	4.33	
1990	5.19	
2000	6.13	

Figure 2-22 World population estimates and forecasts

```
POP.K=POP.J+(DT)(B.JK-D.JK)
POP=POPI
POPI=1.61E9
    POP     - POPULATION (PERSONS)
    DT      - TIME INTERVAL BETWEEN CONSECUTIVE
              CALCULATIONS (YEARS)
    B       - BIRTHS PER YEAR (PERSONS/YEAR)
    D       - DEATHS PER YEAR (PERSONS/YEAR)
    POPI    - POPULATION, INITIAL (PERSONS)
```

The population POP at any time period equals the population in the previous time period plus the number of births B that have taken place and minus the number of deaths D.

The initial value of the population level is set at 1.61 billion, the estimated number of people in the world in 1900 (Carr-Saunders 1936, p. 42). Some world population estimates and forecasts for the years from 1900 to 2000 are shown in Figure 2-22.

It is important to remember that all global population statistics are highly uncertain, because poor or no census data have ever been collected for large areas of the world. In 1855, only about 17 percent of the world's population had been contacted in a census. By 1900, about 55 percent of the population lived in areas covered by a reliable census. In 1960 the total was 67 percent. There has been a drop from the high of 78 percent in 1950 because of the absence of more recent data on Mainland China (U.N. 1962, p. 3). Only 30 percent of the world's population is now covered by census and vital statistics records adequate for detailed demographic analysis (Keyfitz 1971*b*).

Mortality Equations

Death Rate D

```
D.KL=POP.K/LE.K
    D       - DEATHS PER YEAR (PERSONS/YEAR)
    POP     - POPULATION (PERSONS)
    LE      - LIFE EXPECTANCY (YEARS)
```