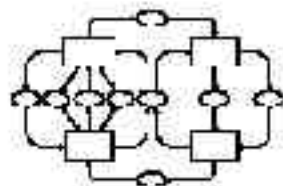


Petri Nets 2000



21ST INTERNATIONAL CONFERENCE ON
APPLICATION AND THEORY OF PETRI NETS

Aarhus, Denmark, June 26-30, 2000

INTRODUCTORY TUTORIAL
Petri Nets

**An Informal Introduction
to
Petri Nets**

**Running Example:
A Producer/Consumer System**

W. Reisig
Humboldt University of Berlin

```
// producer
while (true)
{
    if ( buffer.isEmpty() ) buffer.deliver(content);
}
```

```
// consumer
while (true)
{
    if ( buffer.isFull() )
        result =buffer.remove();
}
```

A Programming Notation

producer

buffer

consumer

ready to
deliver

full
delivered

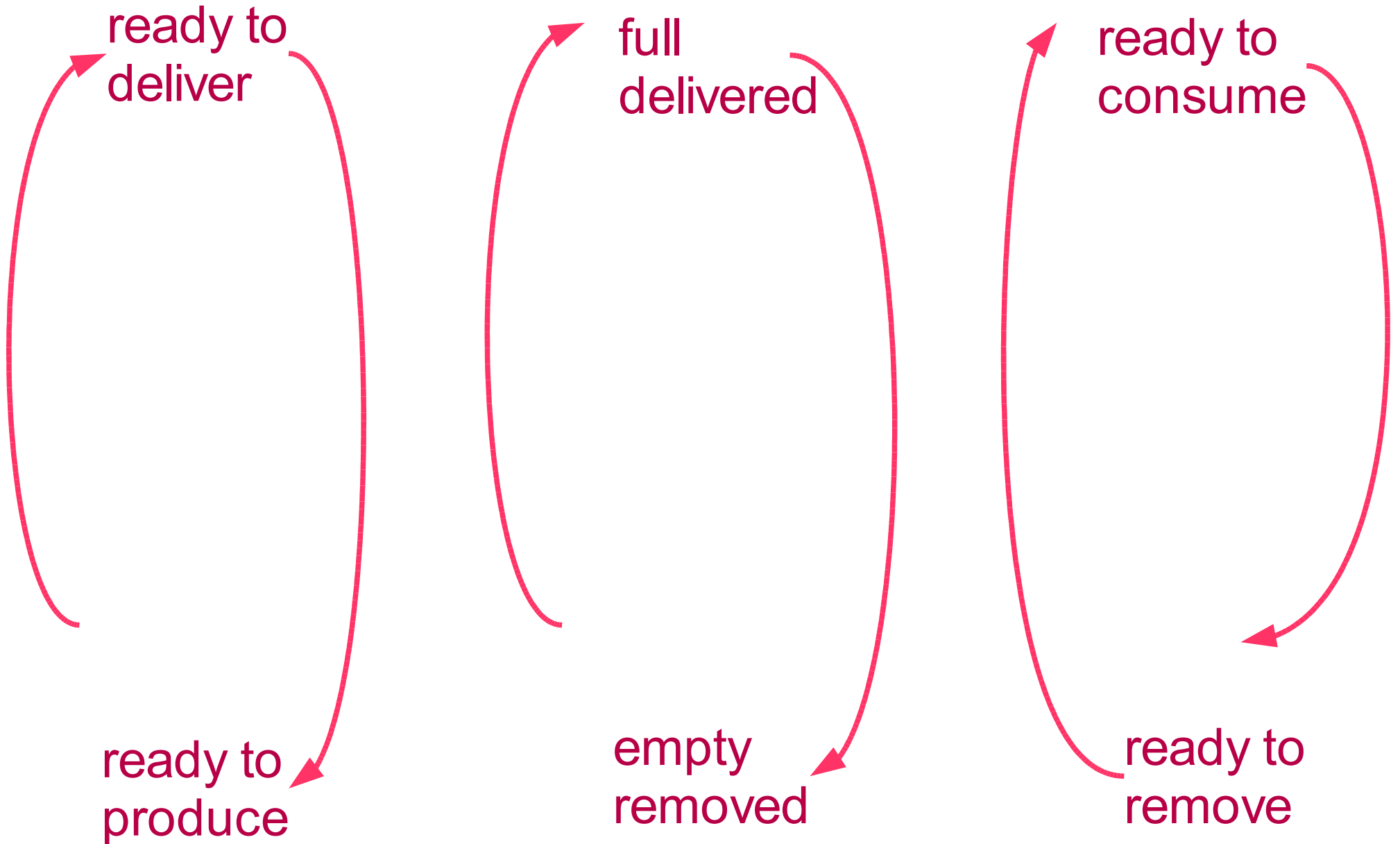
ready to
consume

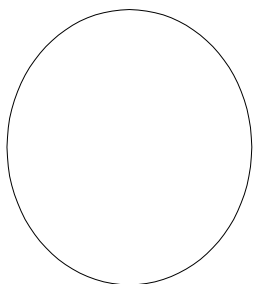
ready to
produce

empty
removed

ready to
remove

A State Based Representation

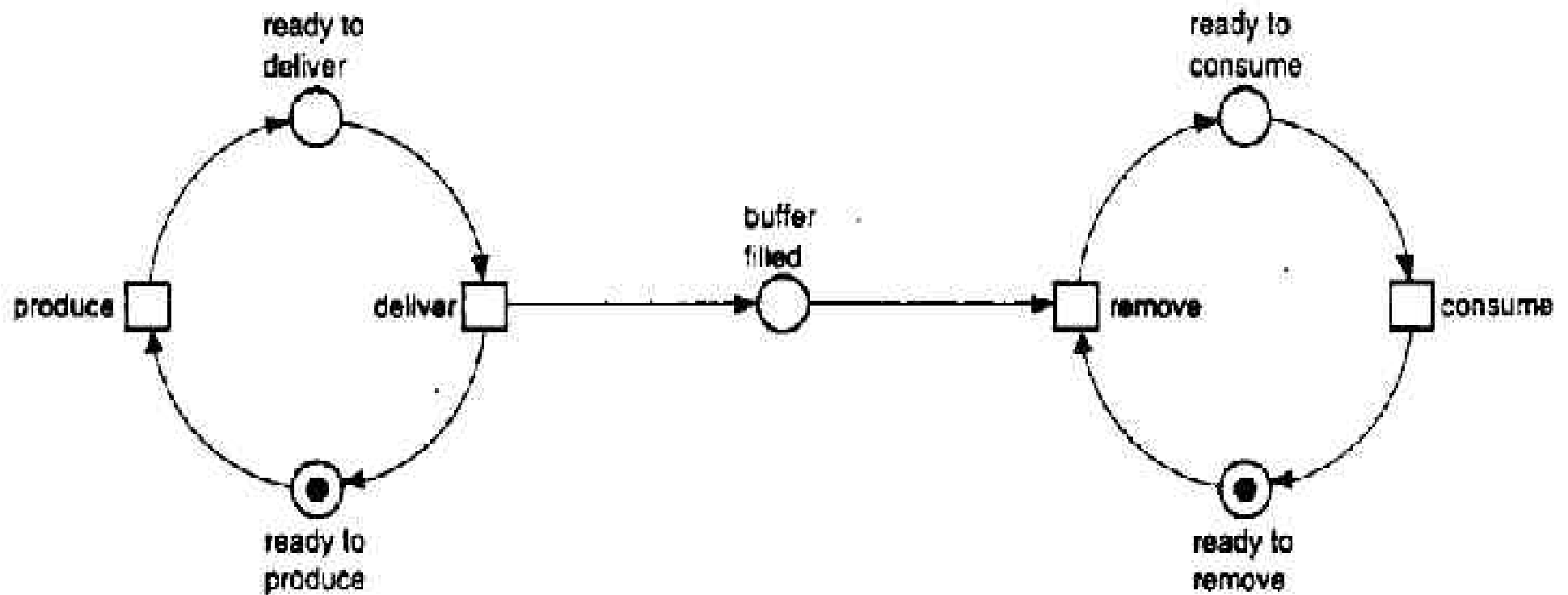




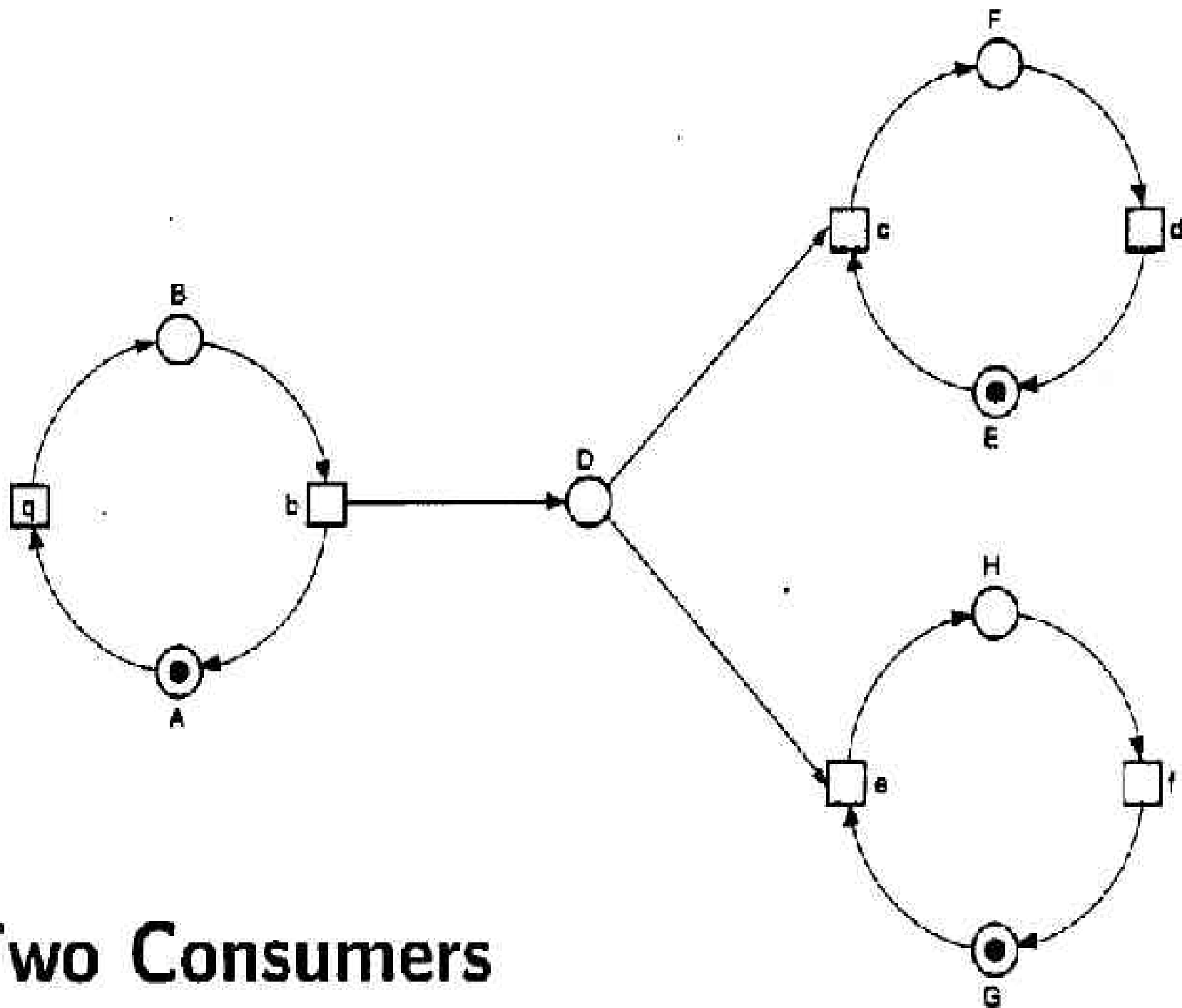
lugares



transiciones

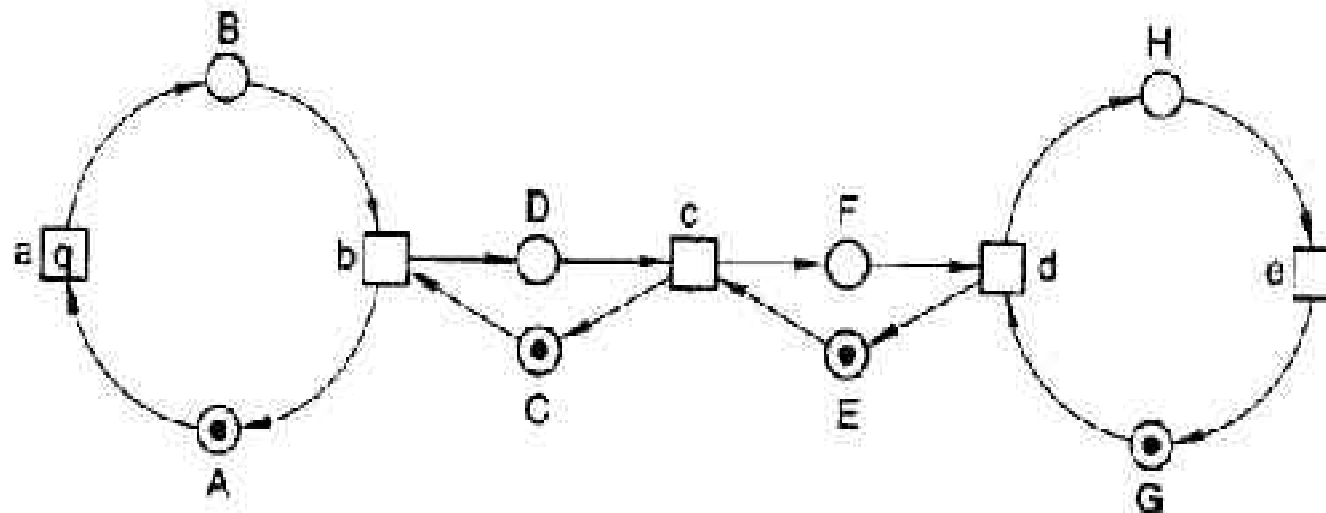


**Neither State Based
Nor Action Based
But Well Ballanced**



Two Consumers

Two Buffer Cells



A : ready to produce
B : ready to deliver
C : first buffer cell empty
D : first buffer cell filled

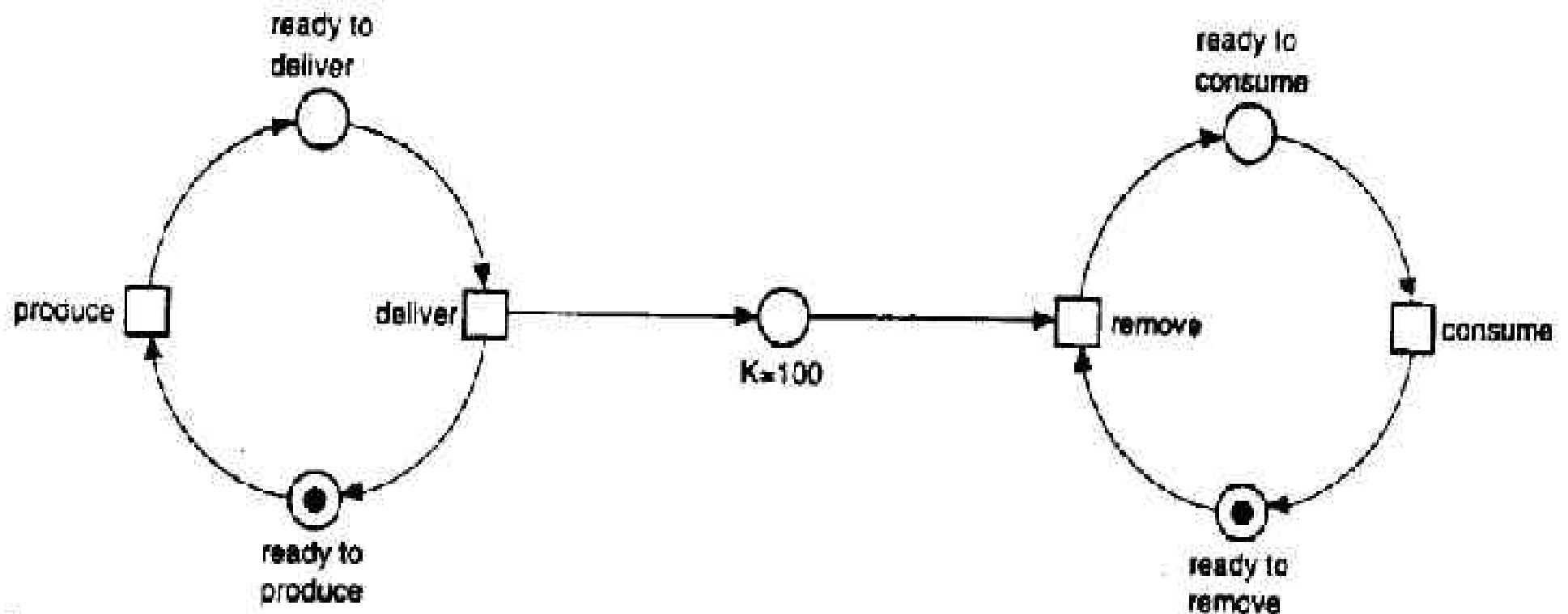
a : produce
b : deliver

E : second buffer cell empty
F : second buffer cell filled
G : ready to remove
H : ready to consume

d : remove
e : consume

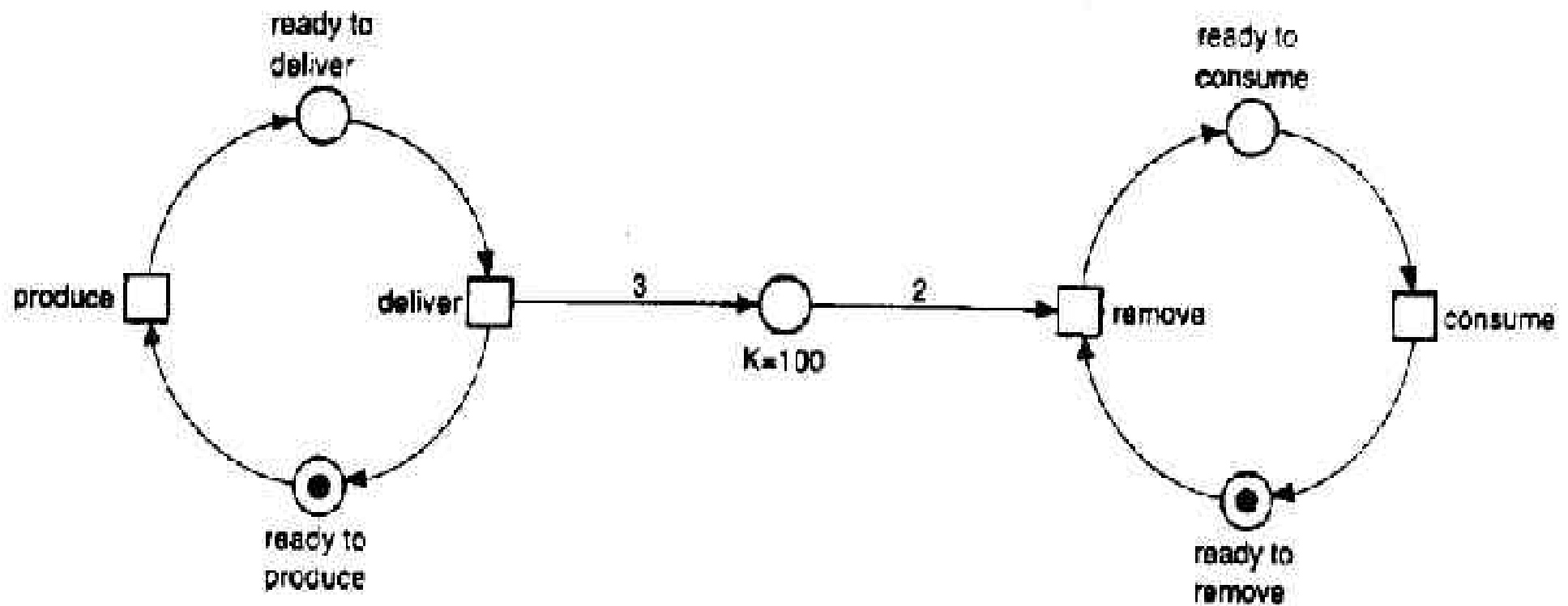
so far: elementary
net
systems

What About 100 Buffer Cells?



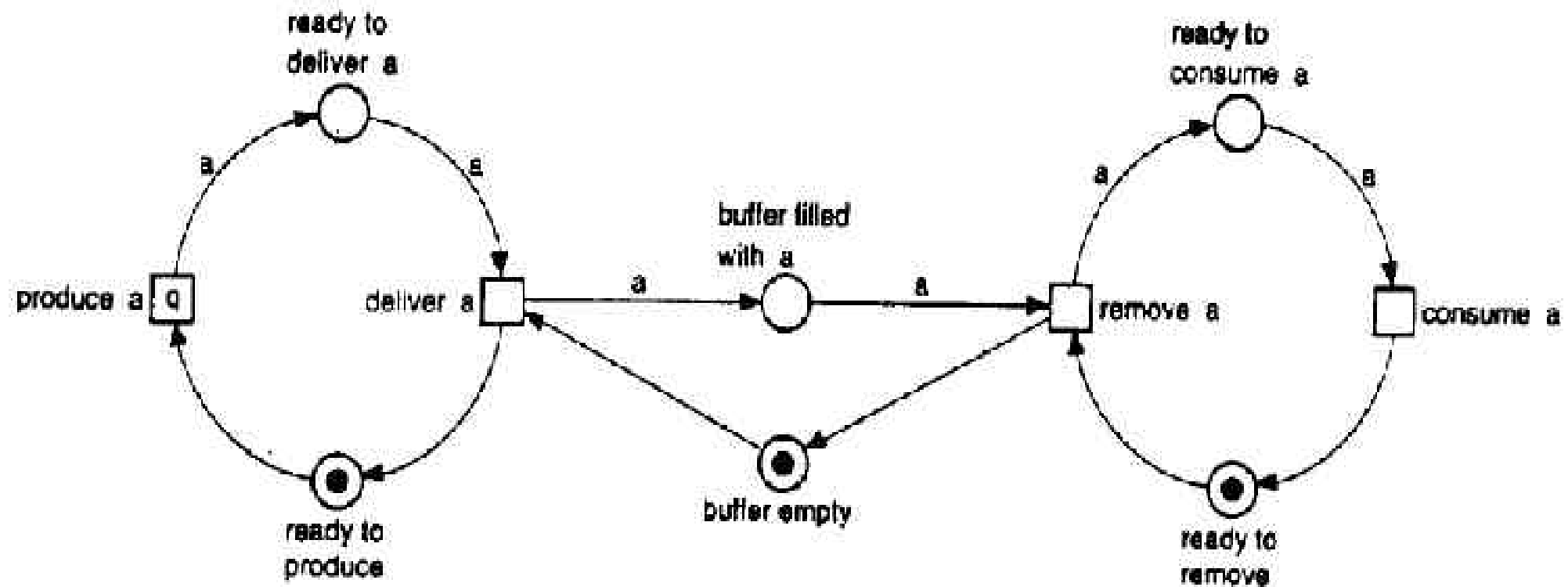
... a place/transition net

Arc Weights of Place/Transition Nets



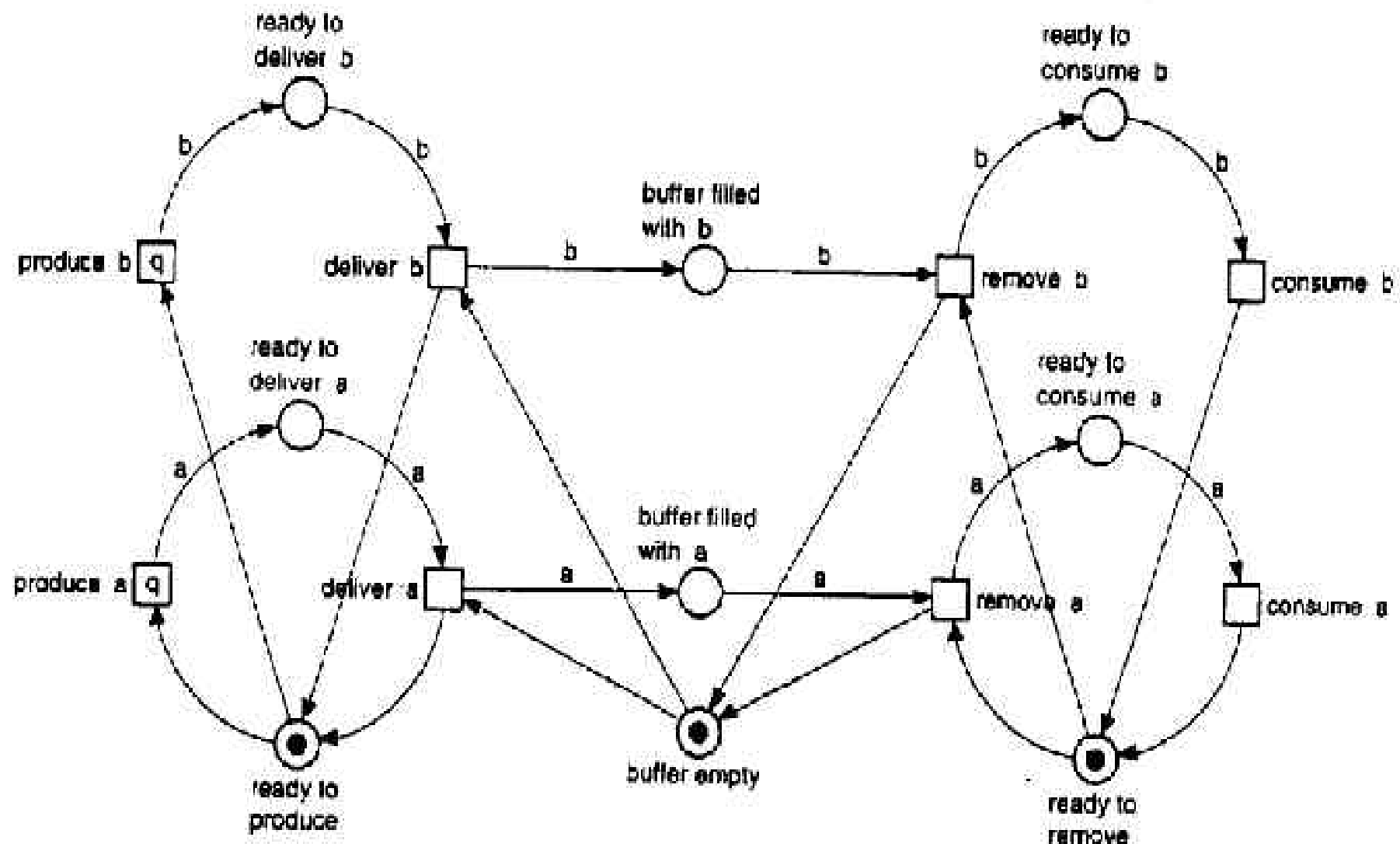
so far: place/transition
nets

Producing and Consuming Objects of Sort a

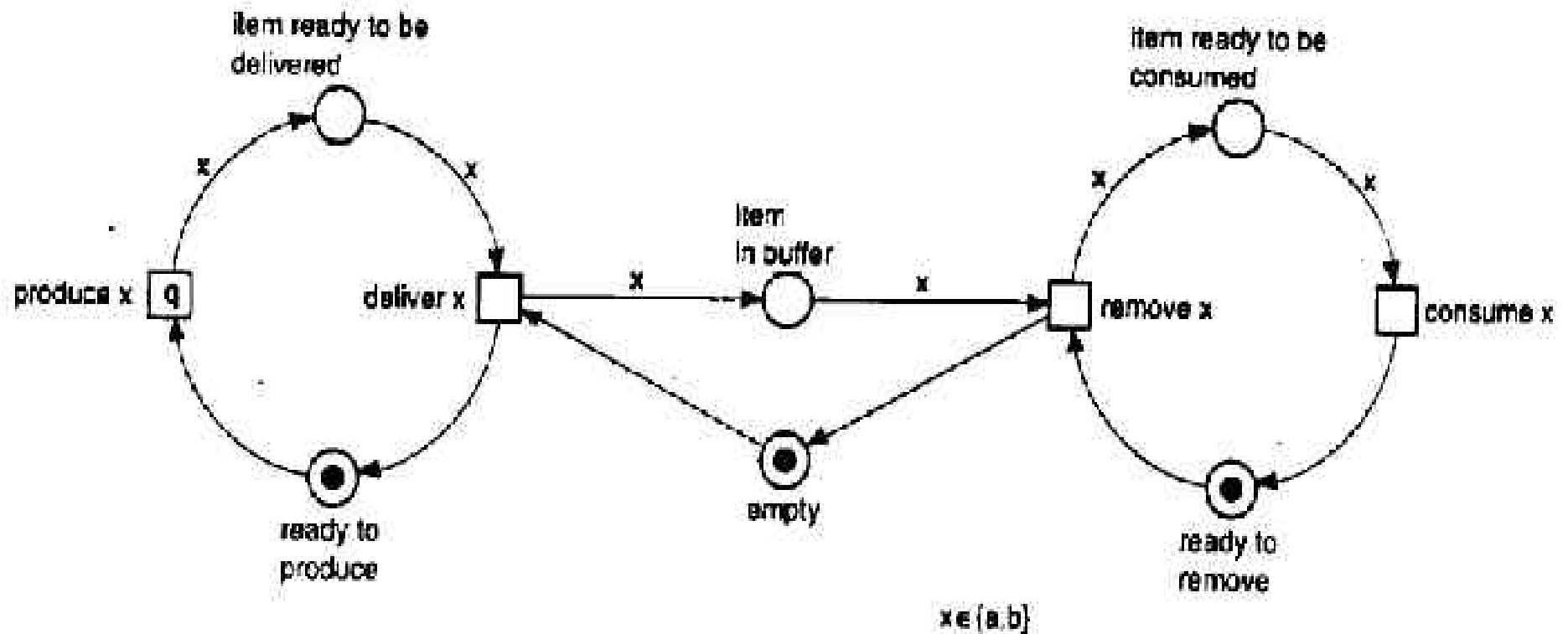


... a high-level net

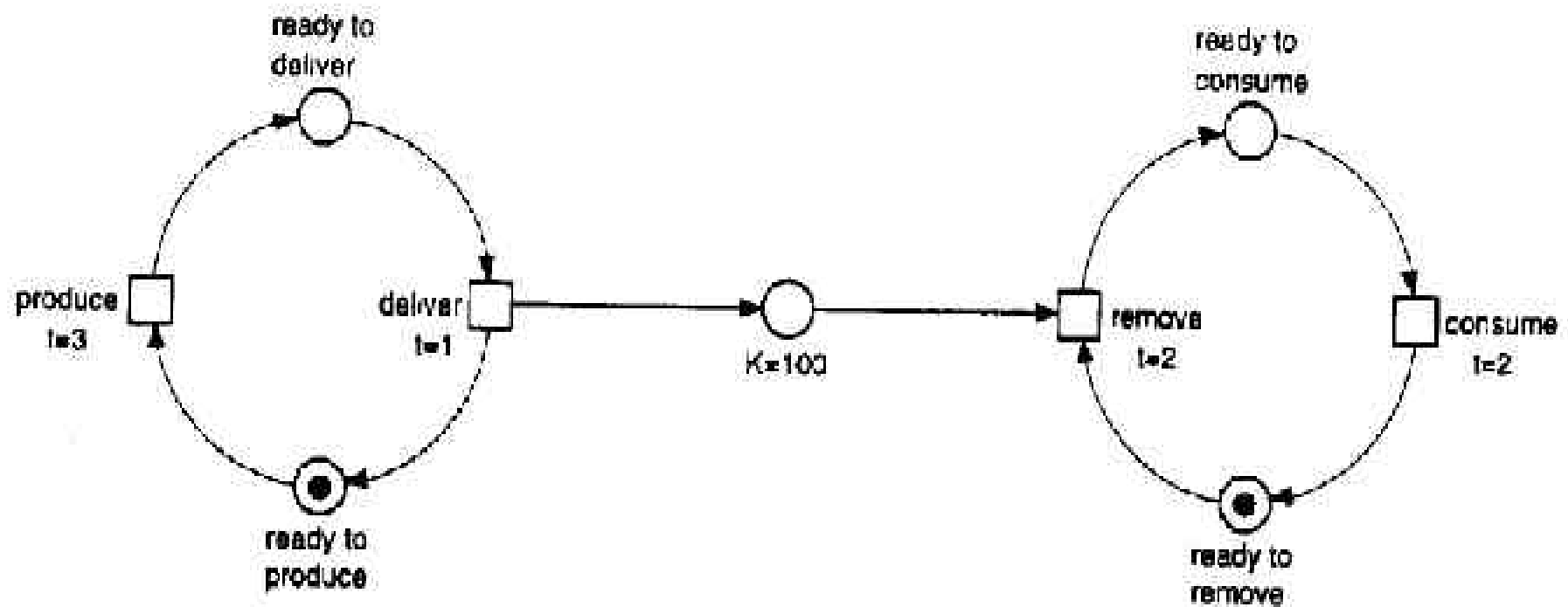
Producing and Consuming Objects of Sort a or b



Producing and Consuming Any Kind of Items

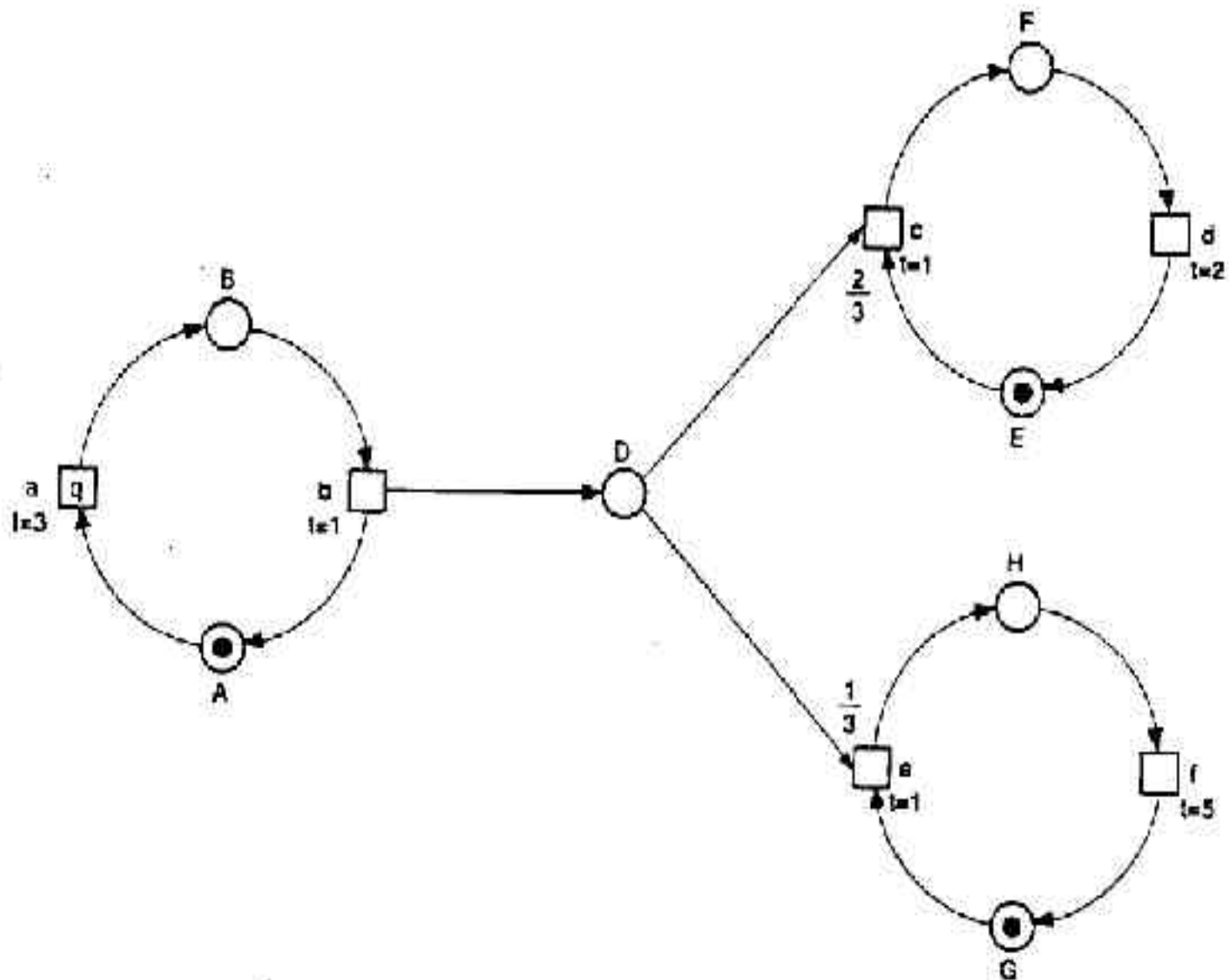


How Long Does It Take to Produce One Item?



... a timed Petri net

Stochastic Conflict Resolution



... a stochastic Petri net