$$b_{1,1} \quad \bullet\bullet\bullet \quad b_{1,j} \quad \Big| \quad r_1$$

$$b_{2,1} \quad \bullet\bullet\bullet \quad b_{2,j} \quad \Big| \quad r_2$$

$$b_{i,1} \quad \bullet\bullet\bullet \quad b_{i,j} \quad \Big| \quad r_i$$

row parity →

column parity

$$c_1 \quad \bullet\bullet\bullet \quad c_j \quad \Big| \quad p$$

(a) Parity calculation

```
0 1 1 1 0 | 1
0 1 1 1 0 | 1
0 1 0 0 0 | 1
0 1 0 1 1 | 1
0 0 0 1 1 | 0
```

(b) No errors

```
0 1 1 1 0 | 1
0 ⓪ 1 1 0 | 1    row parity
0 1 0 0 0 | 1     error
0 1 0 1 1 | 1
0 0 0 1 1 | 0
```
column
parity error

(c) Correctable single-bit error

```
0 1 1 1 1 1 0 | 1
0 ⓪ 1 1 0 ① 1 | 0
0 0 1 1 0 0 1 | 1
0 ⓪ 0 0 0 ⓪ 0 | 0
1 0 1 1 1 1 1 | 0
1 1 0 0 0 1 1 | 0
```

(d) Uncorrectable error pattern

Figure 6.3 A Two-Dimensional Even Parity Scheme