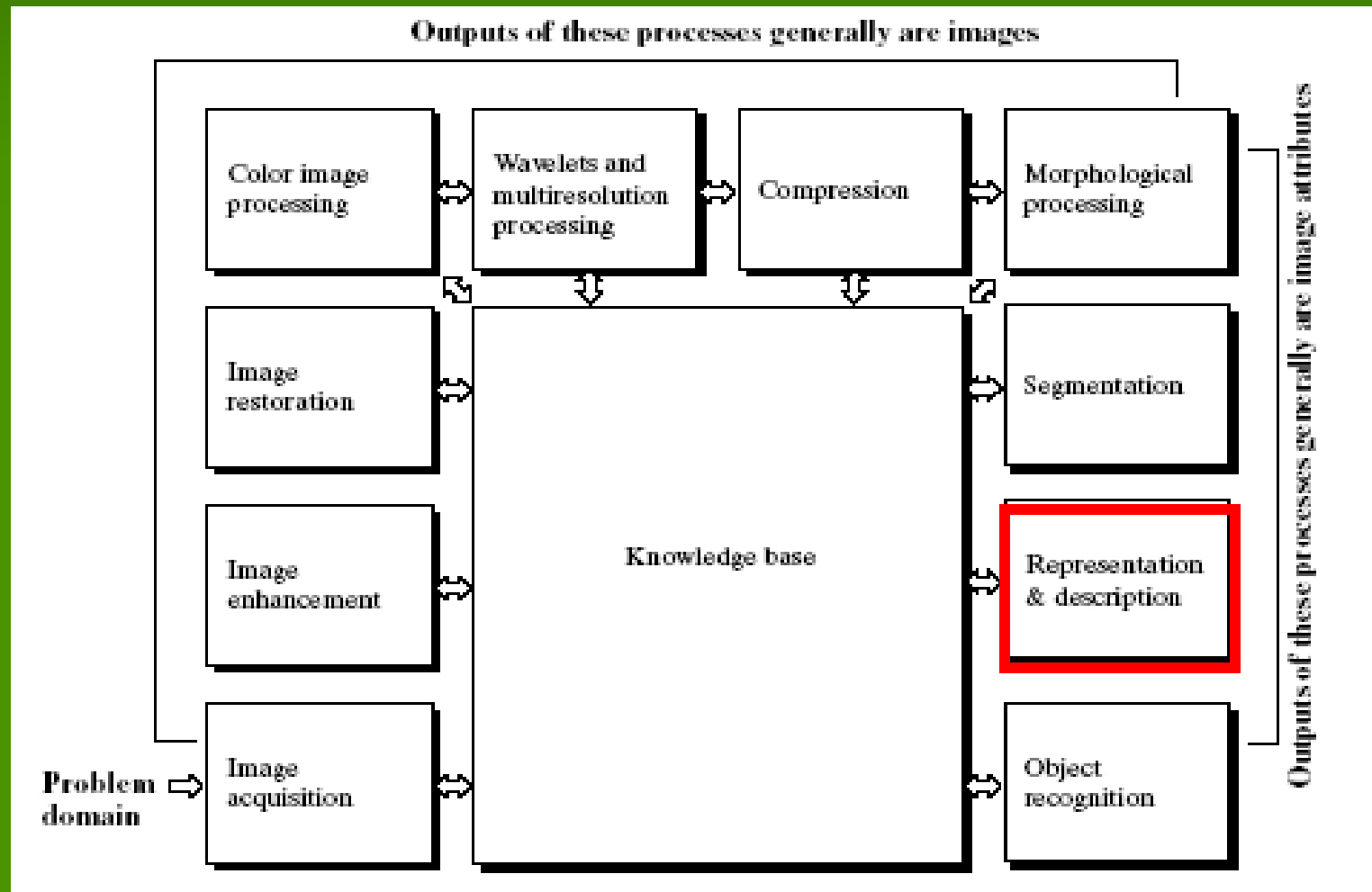


# Image Representation and Description

# Fundamental Steps in Digital Image Processing



# Image Representation and Description

I. Image Representation

II. Image Description

# I. Image Representation

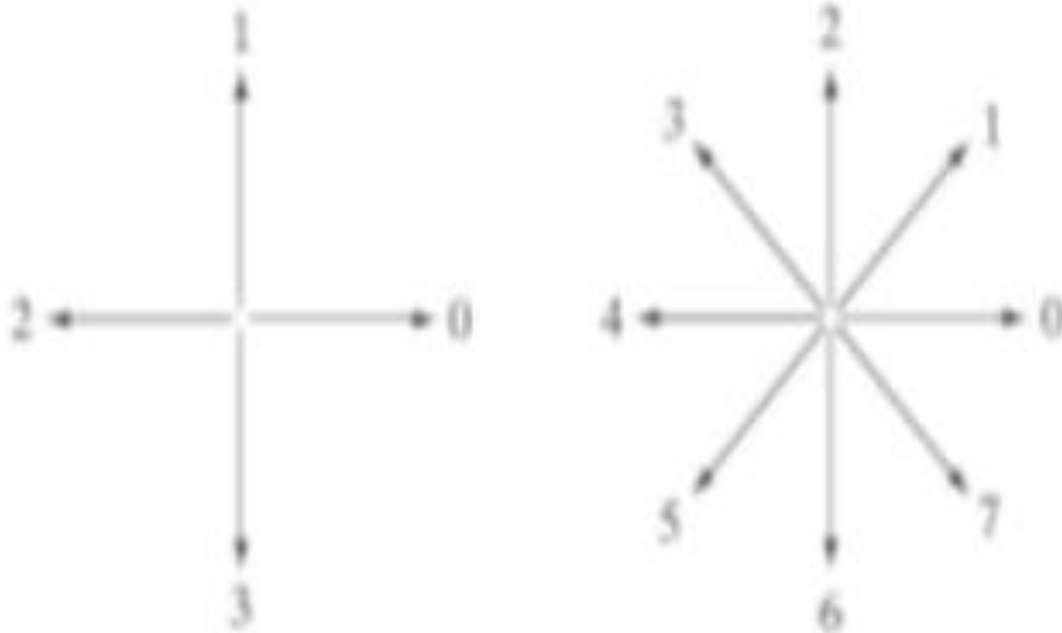
1. Chain Code

2. Splitting

3. Signature

4. Skeleton

# 1. Chain Code



a b

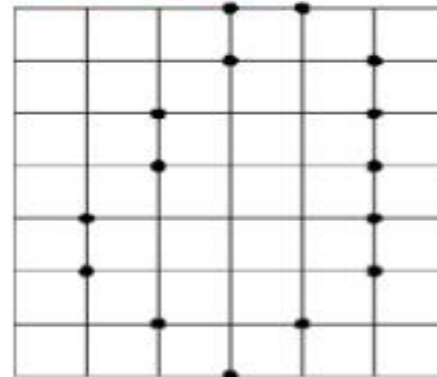
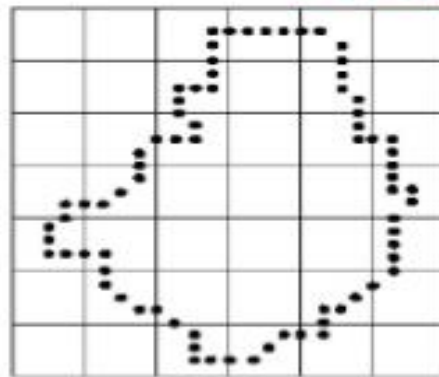
**FIGURE 11.3**

Direction numbers for (a) 4-directional chain code, and (b) 8-directional chain code.

# 1. Chain Code

Example:

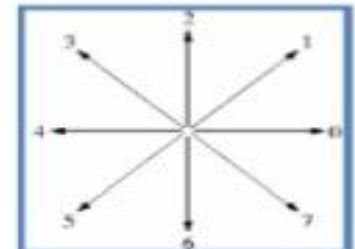
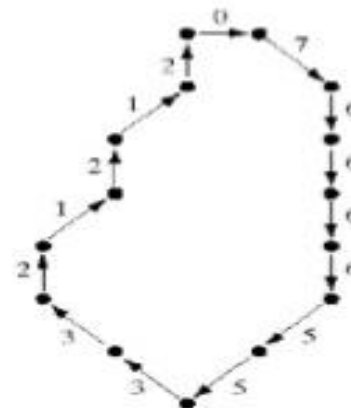
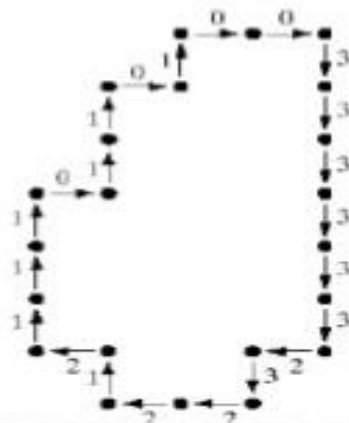
## Chain Codes



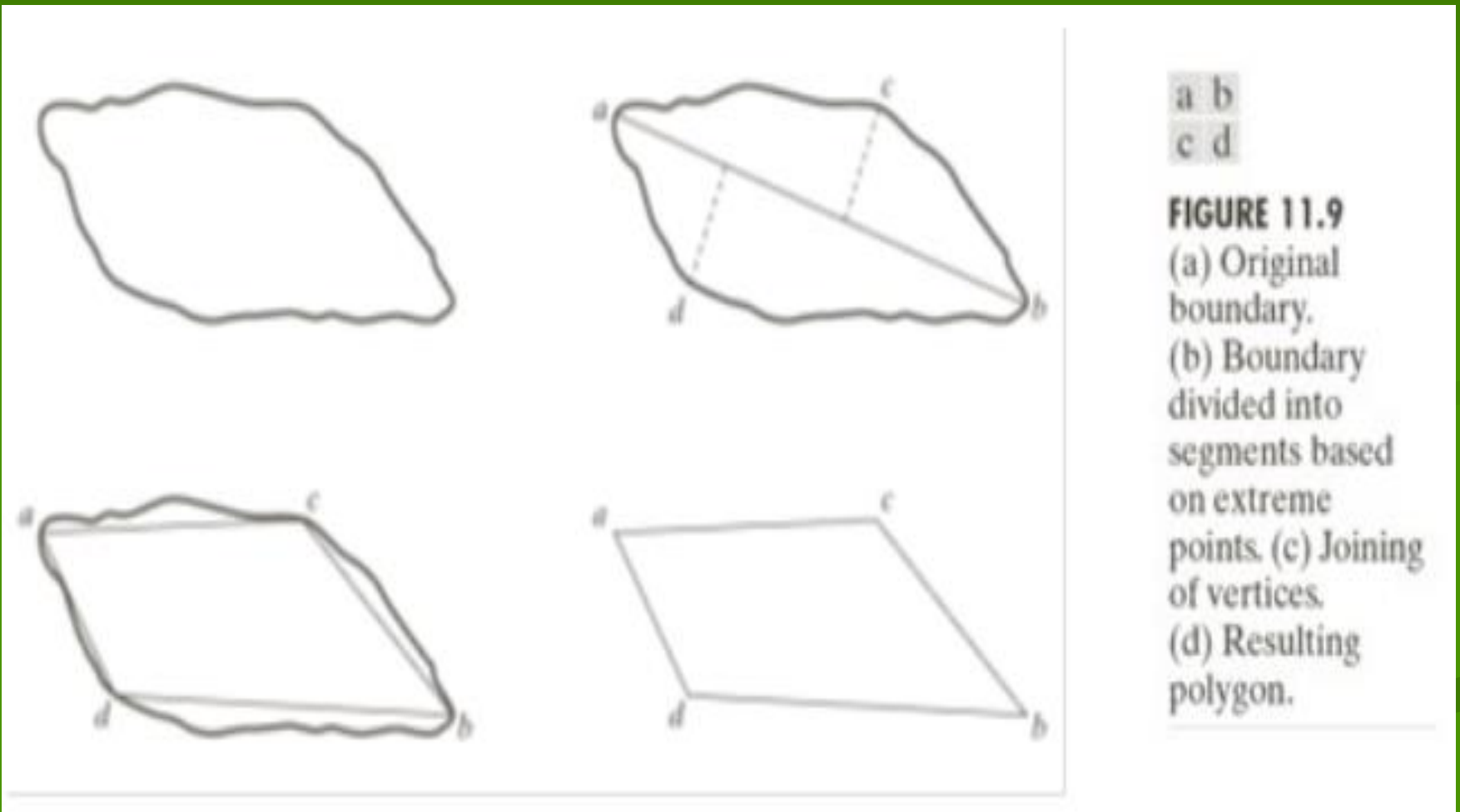
a b  
c d

**FIGURE 11.2**

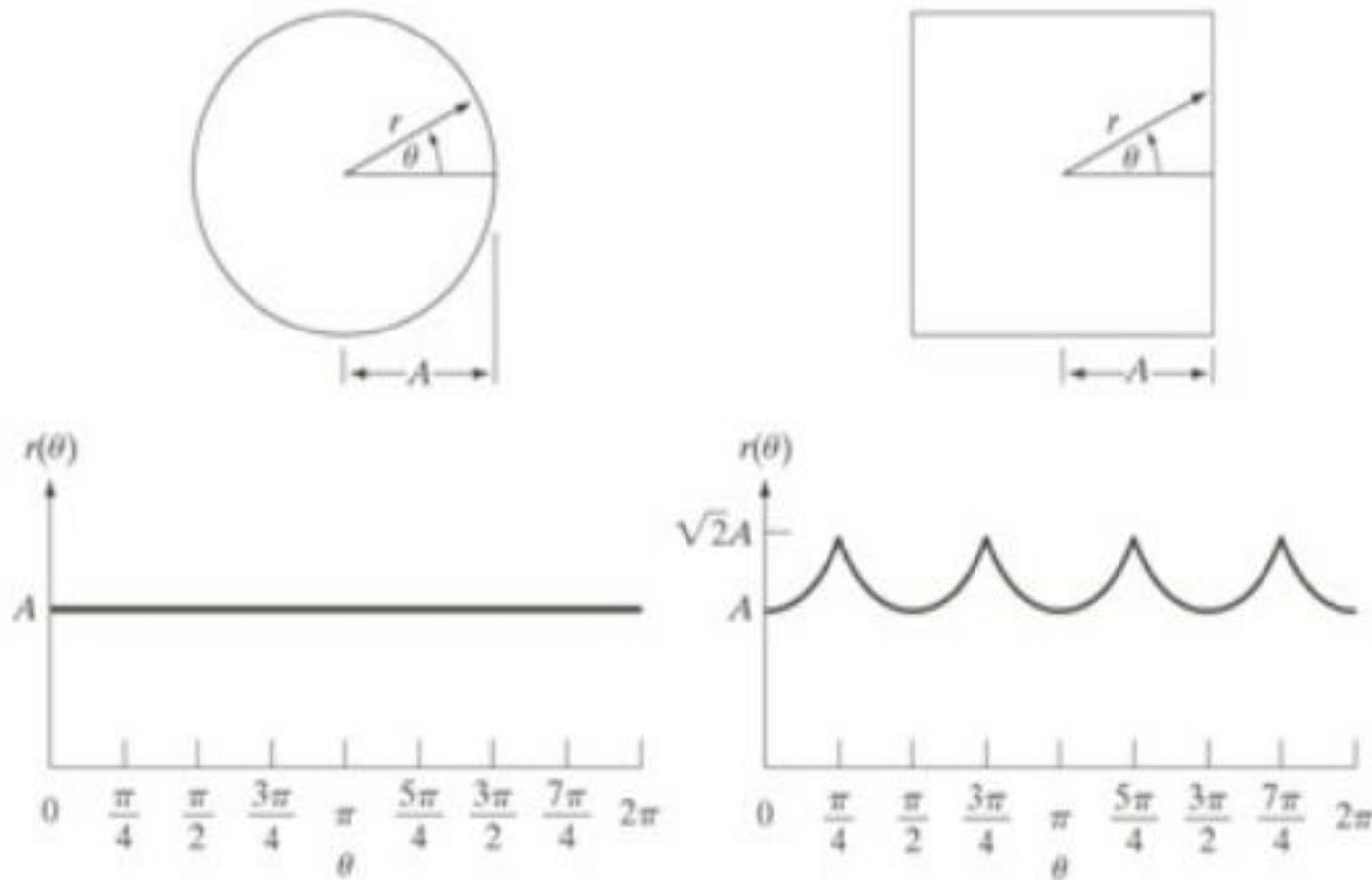
(a) Digital boundary with resampling grid superimposed.  
(b) Result of resampling.  
(c) 4-directional chain code.  
(d) 8-directional chain code.



## 2. Splitting



# 3. Signature



a b

**FIGURE 11.10** Distance-versus-angle signatures. In (a)  $r(\theta)$  is constant. In (b), the signature consists of repetitions of the pattern  $r(\theta) = A \sec \theta$  for  $0 \leq \theta \leq \pi/4$  and  $r(\theta) = A \csc \theta$  for  $\pi/4 < \theta \leq \pi/2$ .



## 4. Skeleton

