$ed : \Sigma^* \times \Sigma^* \to \mathbb{N}$

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$w = a_1 \dots a_n \qquad a_i \in \Sigma$

$eliminar(w, i) = a_1 \dots a_{i-1}\, a_{i+1} \dots a_n$

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$agregar(w, i, b) = a_1 \ldots a_i \, b \, a_{i+1} \ldots a_n$

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$cambiar(w, i, b)$

$ed : \Sigma^* \times \Sigma^* \to \mathbb{N}$

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$eliminar(w, i) = a_1 \ldots a_{i-1}\, a_{i+1} \ldots a_n$

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$agregar(w, 0, b) = bw$

$Cambiar(w, i, b) = a_1 \ldots a_{i-1}\, b\, a_{i+1} \ldots a_n$

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$ed : \Sigma^* \times \Sigma^* \to \mathbb{N}$

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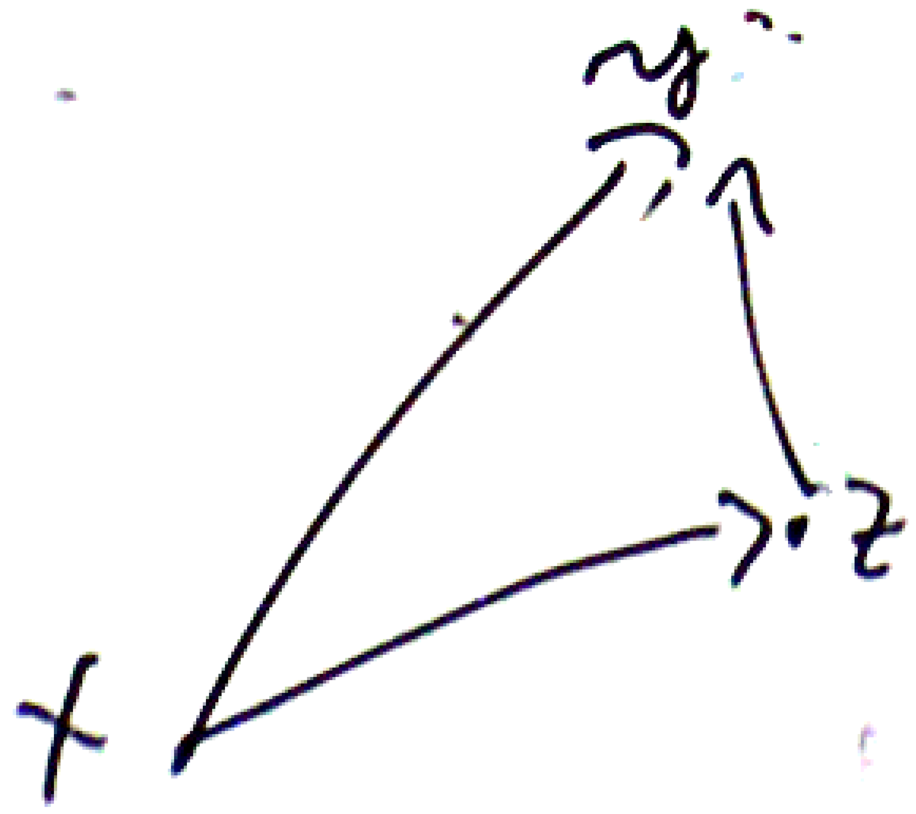
$agregar(w, 0, b) = bw$

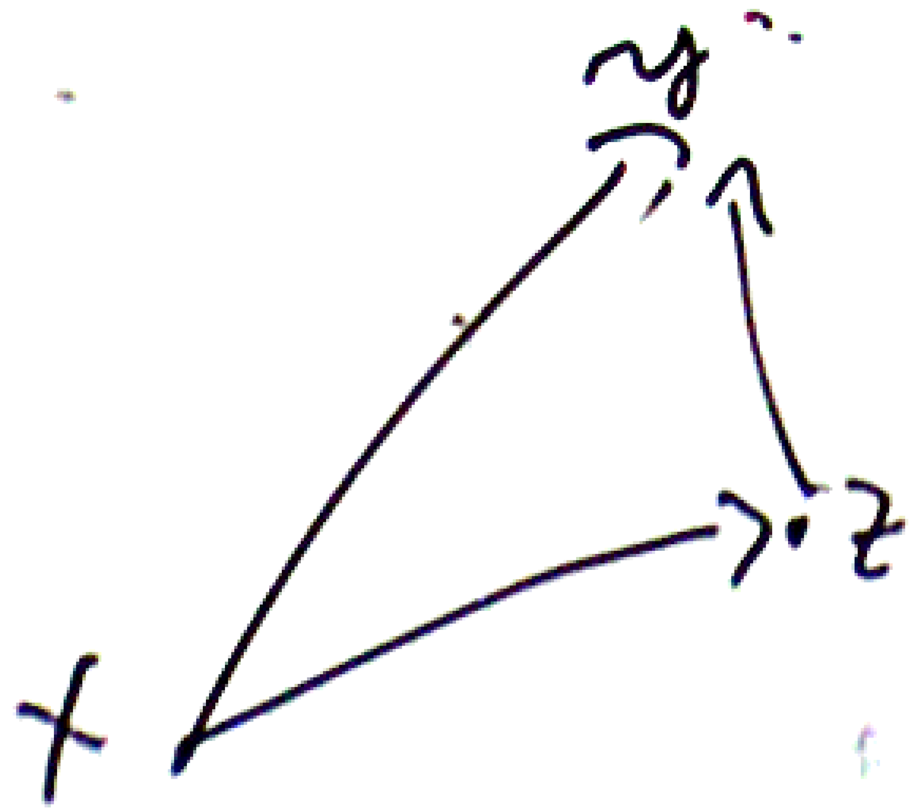
$Cambiar(w, i, b) = a_1 \ldots a_{i-1} \, b \, a_{i+1} \ldots a_n$

$$
\begin{tikzcd}
 & y \\
 & z \arrow[u] \\
x \arrow[uur] \arrow[ur] &
\end{tikzcd}
$$

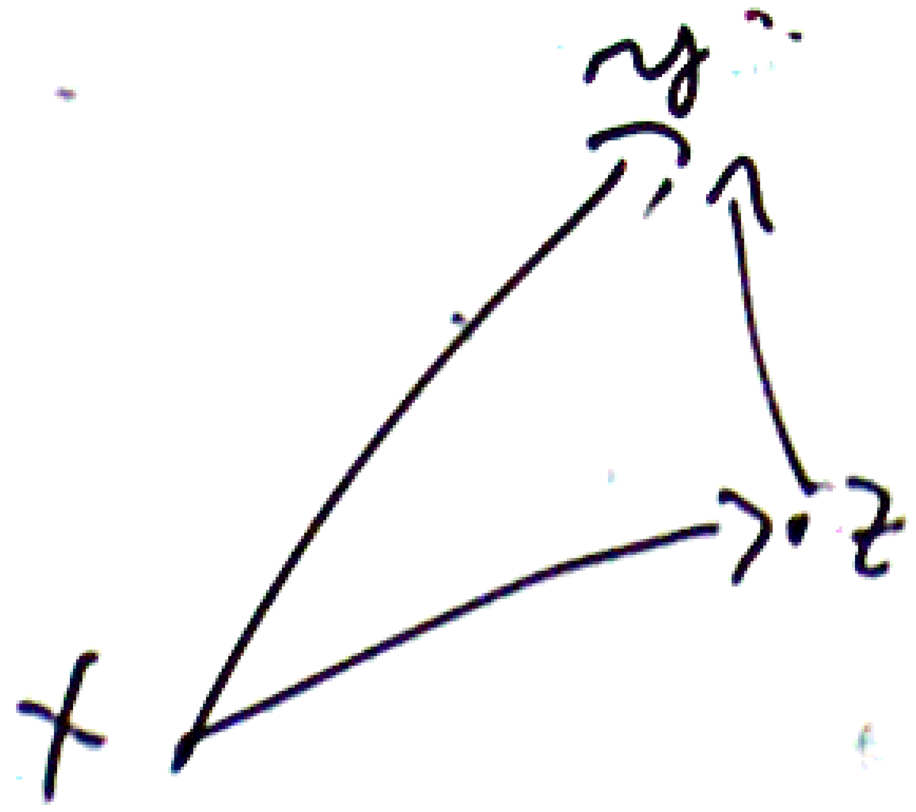
i_0



$$ed(w_1, w_2) \leq ed(w_1, w_3) + ed(w_3, w_2)$$

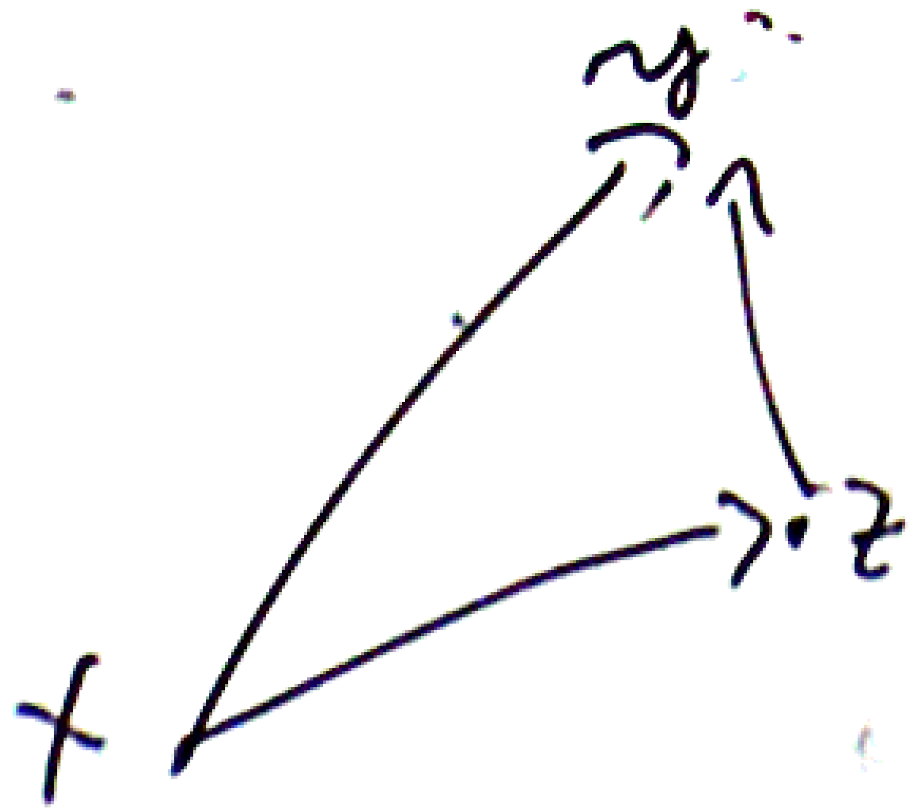


$$ed(w_1,w_2) \le ed(w_1,w_3) + ed(w_3,w_2)$$



$$ed(w_1, w_2) \le ed(w_1, w_3) + ed(w_3, w_2)$$

$$ed(w_1, w_2) \le hd(w_1, w_2)$$

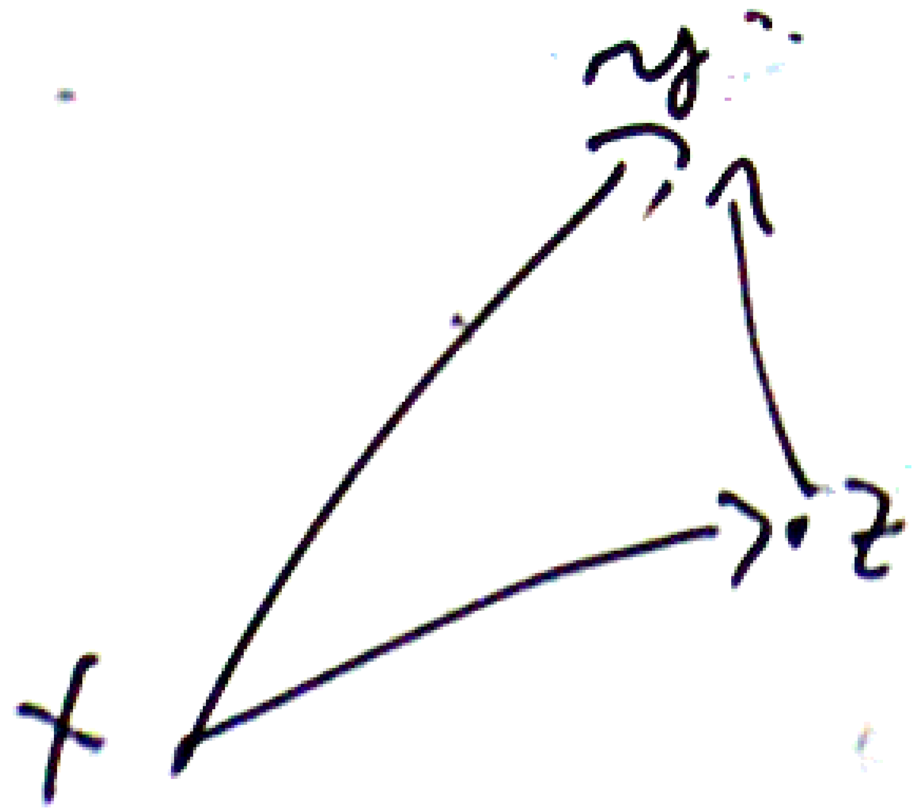


$$ed(w_1, w_2) \leq ed(w_1, w_3) + ed(w_3, w_2)$$

$$ed(w_1, w_2) \leq hd(w_1, w_2)$$

$$ed(w_1, w_2) < hd(w_1, w_2)$$

abcdef
bcdefa

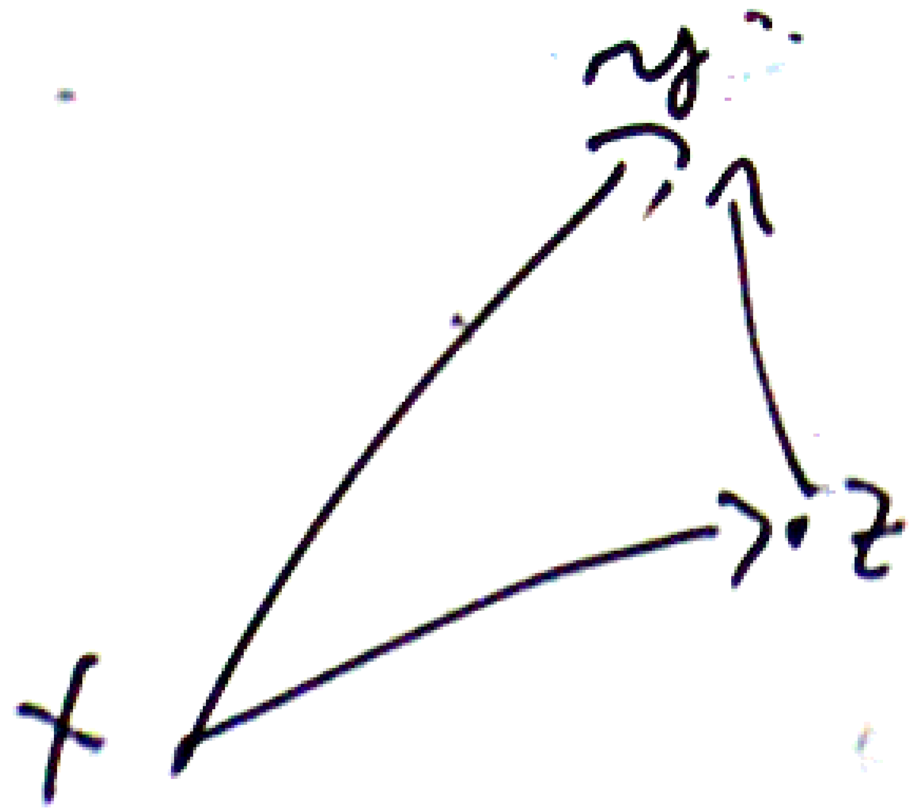


$$ed(w_1, w_2) \le ed(w_1, w_3) + ed(w_3, w_2)$$

$$ed(w_1, w_2) \le hd(w_1, w_2)$$

$$ed(w_1, w_2) < hd(w_1, w_2)$$

abcdef
abcdef

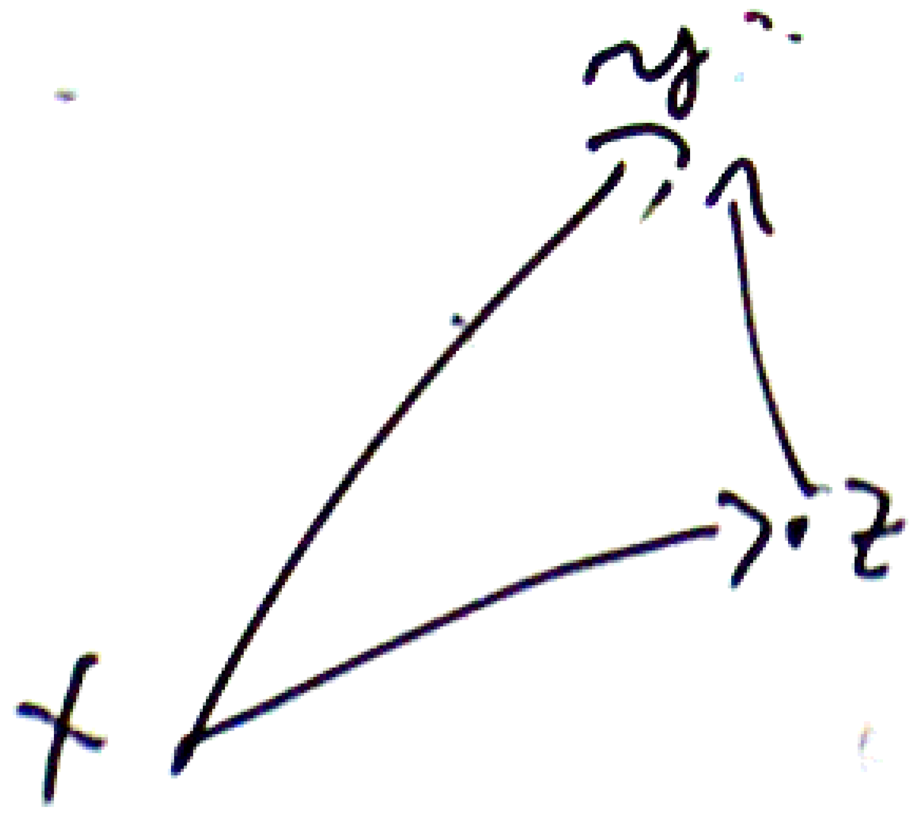


$$ed(w_1, w_2) \leq ed(w_1, w_3) + ed(w_3, w_2)$$

$$ed(w_1, w_2) \leq hd(w_1, w_2)$$

$$ed(w_1, w_2) < hd(w_1, w_2)$$

abcdef
abcdef

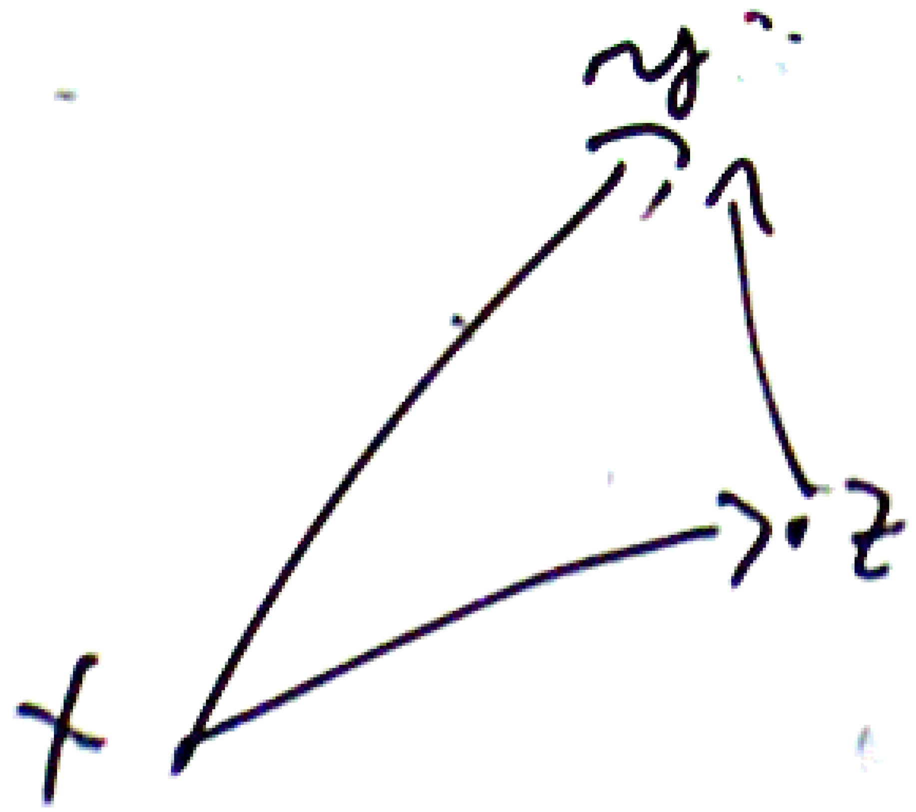


abcdef
abcdef

$$ed(w_1,w_2) \le ed(w_1,w_3) + ed(w_3,w_2)$$

$$ed(w_1,w_2) \le hd(w_1,w_2)$$

$$ed(w_1,w_2) < hd(w_1,w_2)$$



$$ed(w_1,w_2) \le ed(w_1,w_3) + ed(w_3,w_2)$$

$$ed(w_1,w_2) \le hd(w_1,w_2)$$

abcdef
abcdef

$$ed(w_1,w_2) < hd(w_1,w_2)$$

$$w[i]$$

$$w_1 \xrightarrow{O_1 \dots O_k} w_2$$

$$ld(O_1, O_2) = k$$

$$w_1 \xrightarrow[\;0 \le i \le |w_1|\;]{O_1 \dots O_k} w_2$$

$$ld(O_1, O_2) = k$$

$$w_1 \xrightarrow{O_1 \dots O_k} w_2$$

$$ld(w_1, w_2) = k$$

$$0 \le i \le |w_1|$$

$$w_1[1, i]$$

$$O_1 \dots O_k$$

$$W_1 \longrightarrow W_2$$

$$0 \leq i \leq |W_1|$$

$$ld(W_1, W_2) = k$$

$$W_1[1, i]$$

$$w_1 \xrightarrow[0 \leq i \leq |w_1|]{o_1 \dots o_k} w_2$$

$$ld(w_1, w_2) = k$$

$$w_1[1, i]$$

$$w_1 \xrightarrow[0 \le i \le |w_1|]{O_1 \ldots O_k} w_2$$

$ld(w_1, w_2) = k$

$w_1[1, i]$

$$w_1 \xrightarrow{O_1 \dots O_k} w_2$$

$0 \leq i \leq |w_1|$

$w_1[1, i]$

$ld(w_1, w_2) = k$

$O_1, \dots, O_{20}$

$w_1[1,5]$

$|w_2|$

$$w_1 \xrightarrow{o_1 \dots o_k} w_2$$

$ld(w_1, w_2) = k$

$0 \le i \le |w_1|$

$o_1, \dots, o_{20}$

$w_1[1, i]$

$w_2[1, 5]$

$$W_1 \xrightarrow{O_1 \dots O_k} W_2$$

$0 \leq i \leq |W_1|$

$W_1[1, i]$

$ld(W_1, W_2) = k$

$O_1, \dots, O_{20}$

$W_1[1,5]$

$O_1, \dots, O_7$

$$O_1 \dots O_k$$

$$w_1 \longrightarrow w_2$$

$$0 \leq i \leq |w_1|$$

$$w_1[1, i]$$

$$ld(w_1, w_2) = k$$

CASA
COSO

$$O_1, \dots, O_{20}$$

$$w_1[1, 5]$$

$$O_1, \dots, O_7$$

$$O_1 \dots O_k$$

$$w_1 \longrightarrow w_2$$

$$0 \leq i \leq |w_1|$$

$$w_1[1, i]$$

$$ed(w_1, w_2) = k$$

C A S A
C O S O

$$O_1, \dots, O_{20}$$

$$w_2[1, 5]$$

$$O_1, \dots, O_7$$

$$O_1 \ldots O_k$$

$$W_1 \longrightarrow W_2$$

$$0 \leq i \leq |W_1|$$

$$W_1[1, i]$$

$$ld(W_1, W_2) = k$$

CASA

OSO

$$O_1, \ldots, O_{20}$$

$$W_1[1,5]$$

$$O_1, \ldots, O_7$$

$$W_1 \xrightarrow{O_1 \ldots O_k} W_2$$

$$0 \le i \le |W_1|$$

$$W_1[1, i]$$

$$ld(W_1, W_2) = k$$

CASA
COSO

$$O_1, \ldots, O_{20}$$

$$W_1[1,5]$$

$$O_1, \ldots, O_7$$

$$W_1 \xrightarrow{O_1,\dots,O_k} W_2$$

$$\xrightarrow{O_1,\dots,O_\ell}$$

$W_2[1,i]$

$s \in \{0,\dots,\ell-1\}$

O_{s+1} $\quad W_1[1,i]$

O_s

$O_1, \ldots, O_k$

$$W_1 \xrightarrow{\qquad\qquad} W_2$$

$$\xrightarrow{O_1, \ldots, O_\ell}$$

$W_2[1, i]$

$s \in \{0, \ldots, \ell - 1\}$

O_{s+1} $\quad$ $W_1[1, i]$

O_s

$$W_1 \xrightarrow{O_1,\dots,O_k} W_2$$

$$\xrightarrow{O_1,\dots,O_\ell}$$

$W_1[1,i]$

$s \in \{0,\dots,\ell-1\}$

O_{s+1} $\quad$ $W_1[1,i]$

O_s

$O_1, \ldots, O_k$

$W_1 \longrightarrow W_2$

$\xrightarrow{O_1, \ldots, O_\ell}$

$W_1[1, i]$

$s \in \{0, \ldots, \ell-1\}$

O_{s+1} $\quad W_1[1, i]$

O_s

$O_s \quad O_{s+1}$

$[\cancel{1}, i]$ $\quad i]$

$$W_1 \xrightarrow{O_1,\dots,O_k} W_2$$

$$\xrightarrow{O_1,\dots,O_\ell}$$

$W_1[1,i]$

$s \in \{0,\dots,\ell-1\}$

O_{s+1} $\quad$ $W_1[1,i]$

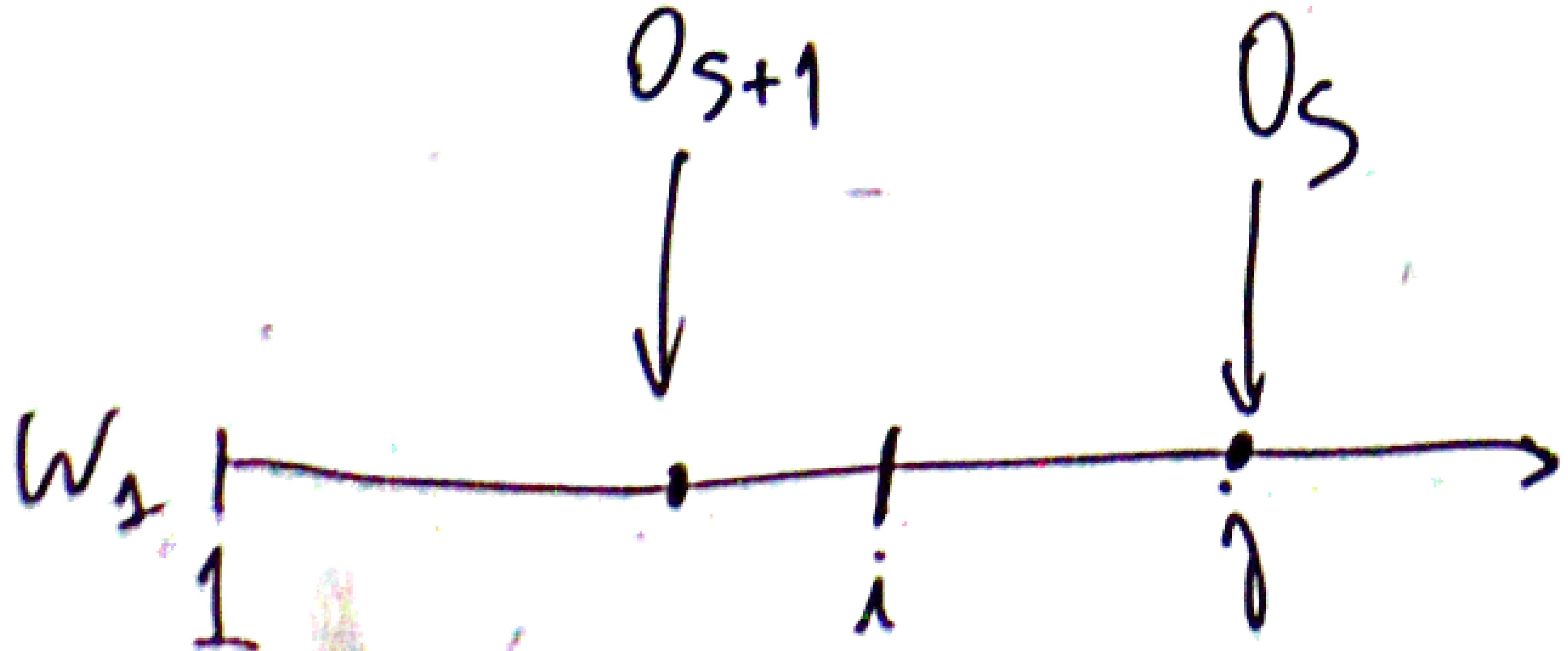
O_s

$O_s \quad O_{s+1}$

$\cancel{[1,i]} \quad [1,i]$

$O_1, \dots, O_k$

$W_1 \longrightarrow W_2$



$s \in \{0, \dots, \ell - 1\}$

O_{s+1} $\quad$ $W_1[1, i]$

O_s

O_s $\quad$ O_{s+1}

$\cancel{(1, i]}$ $\quad$ $[1, i]$

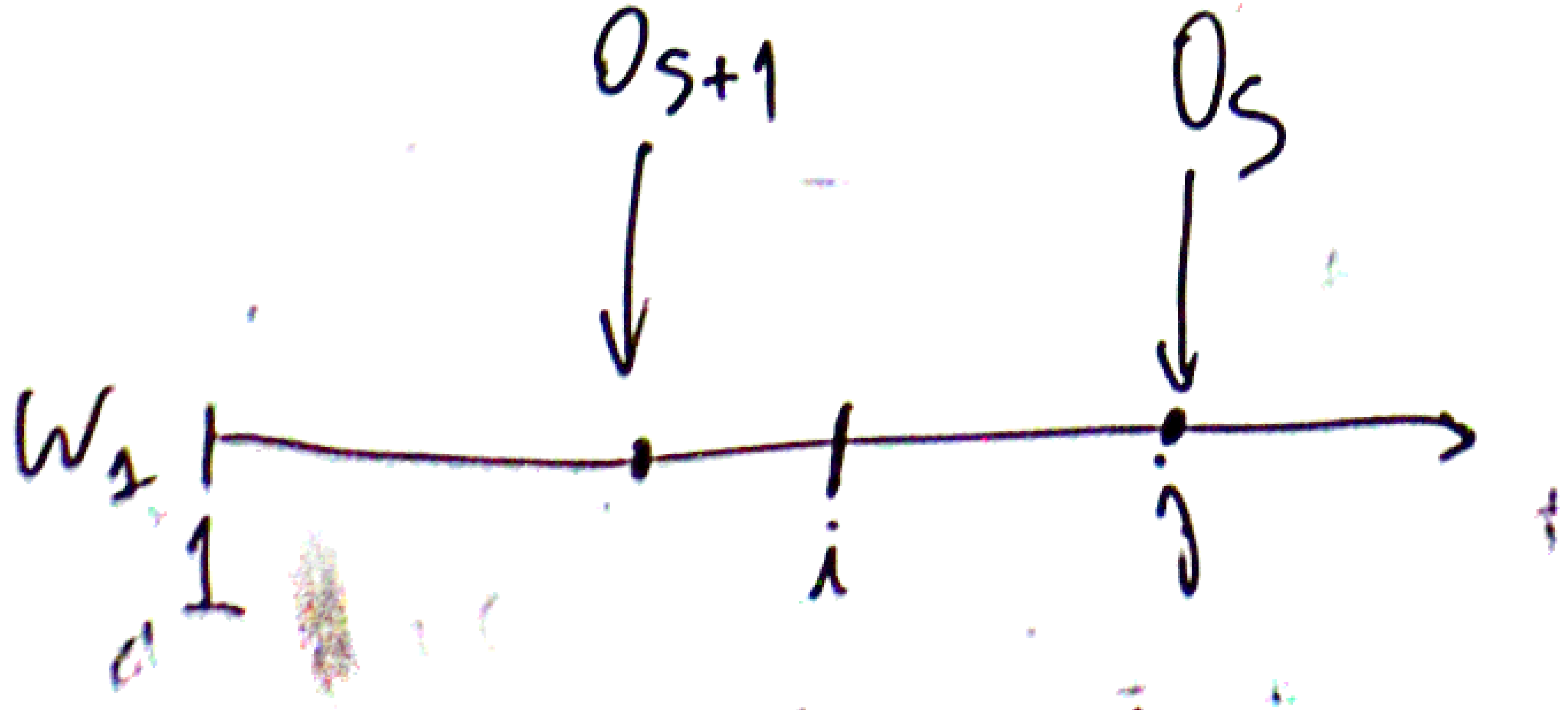
$O_1, \ldots, O_k$

$s \in \{0, \ldots, \ell-1\}$

$W_1 \longrightarrow W_2$

O_{s+1} $\quad W_1[1,i]$

O_s

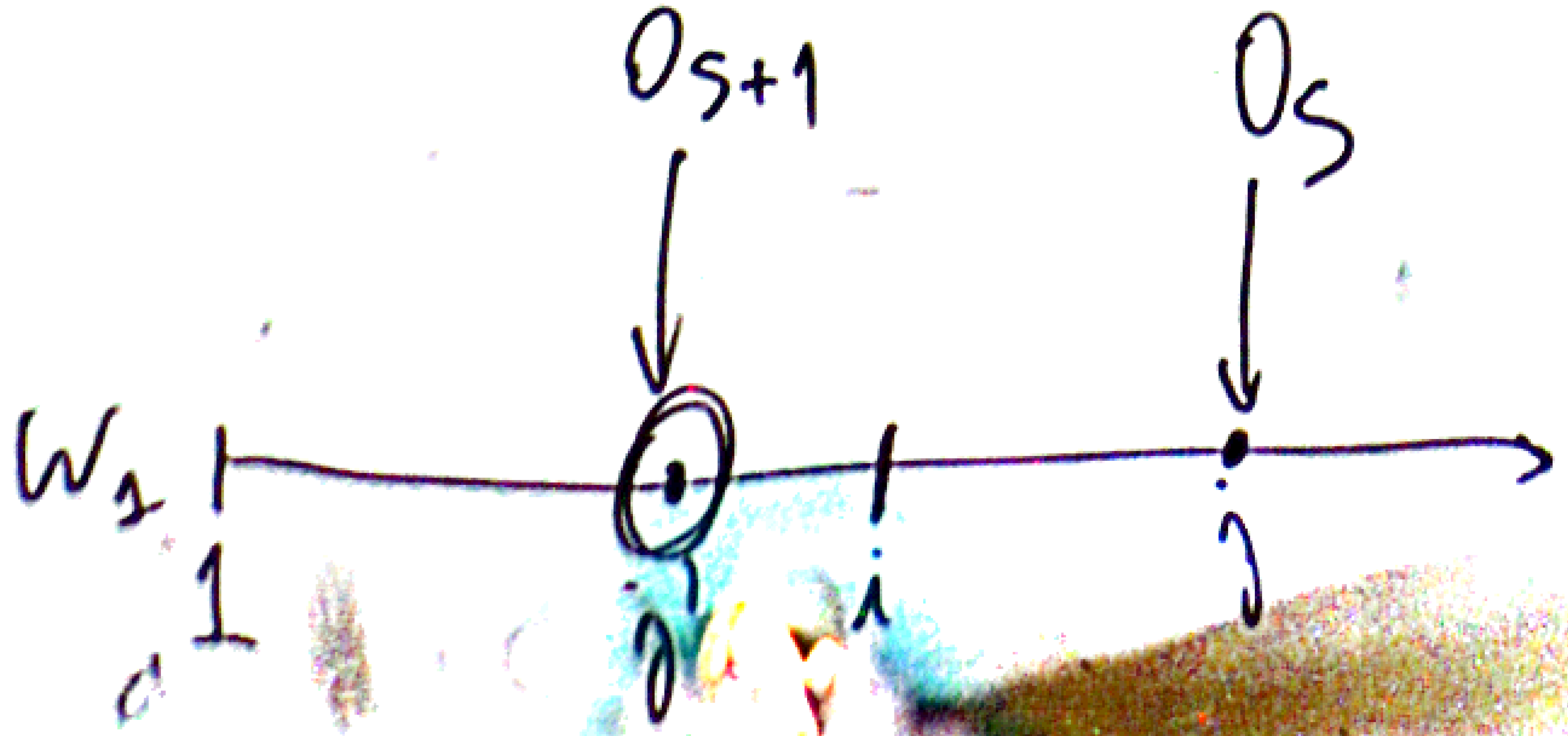


$O_s \quad O_{s+1}$

$\cancel{(1,i]} \quad [1,i]$

$O_1, \dots, O_k$

$W_1 \longrightarrow W_2$



$s \in \{0, \dots, l-1\}$

O_{s+1} $\quad W_1[1, i]$

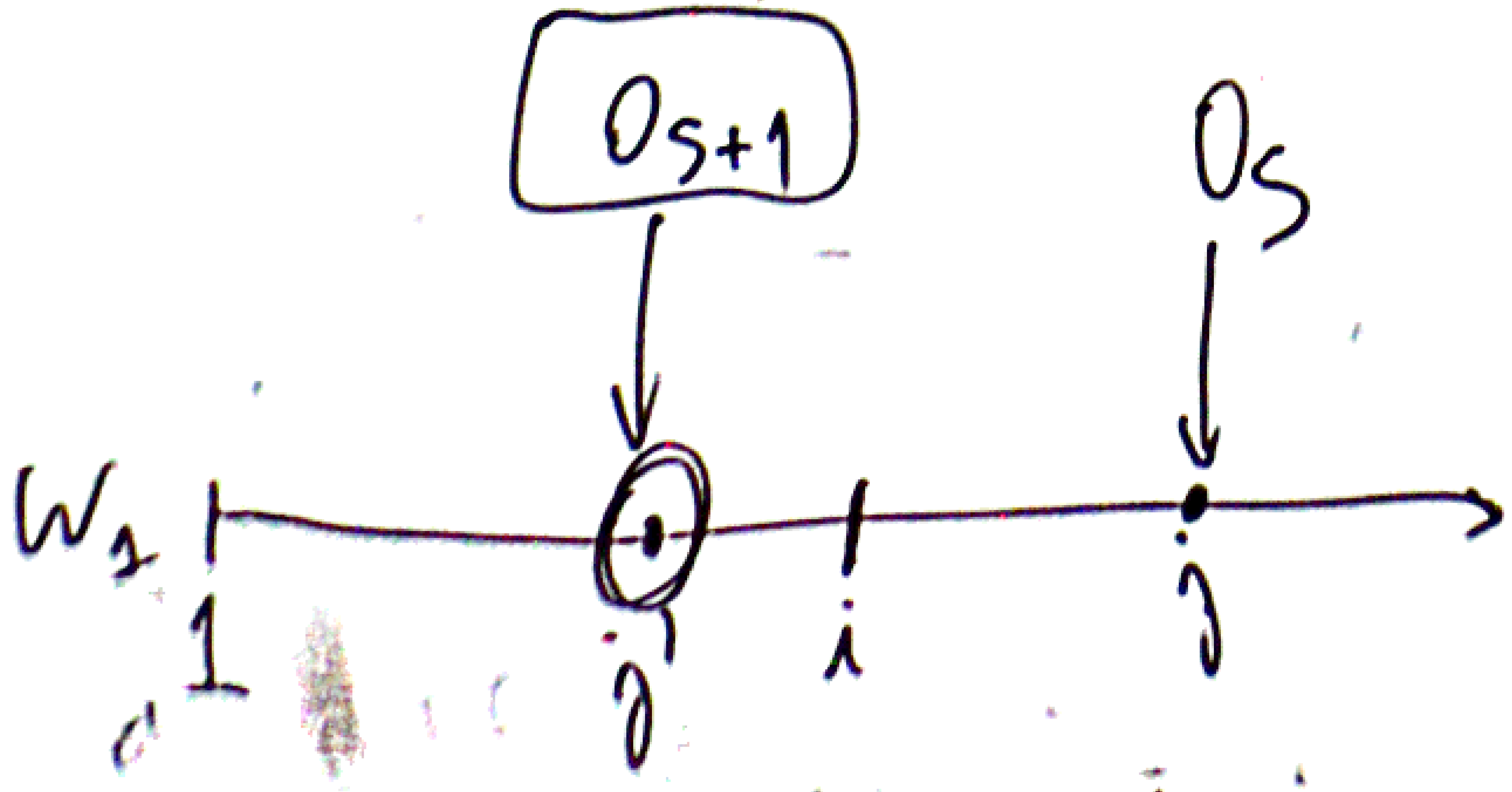
O_s

$O_s \quad O_{s+1}$

$\cancel{[1, i]} \quad [1, i]$

$O_1, \ldots, O_k$

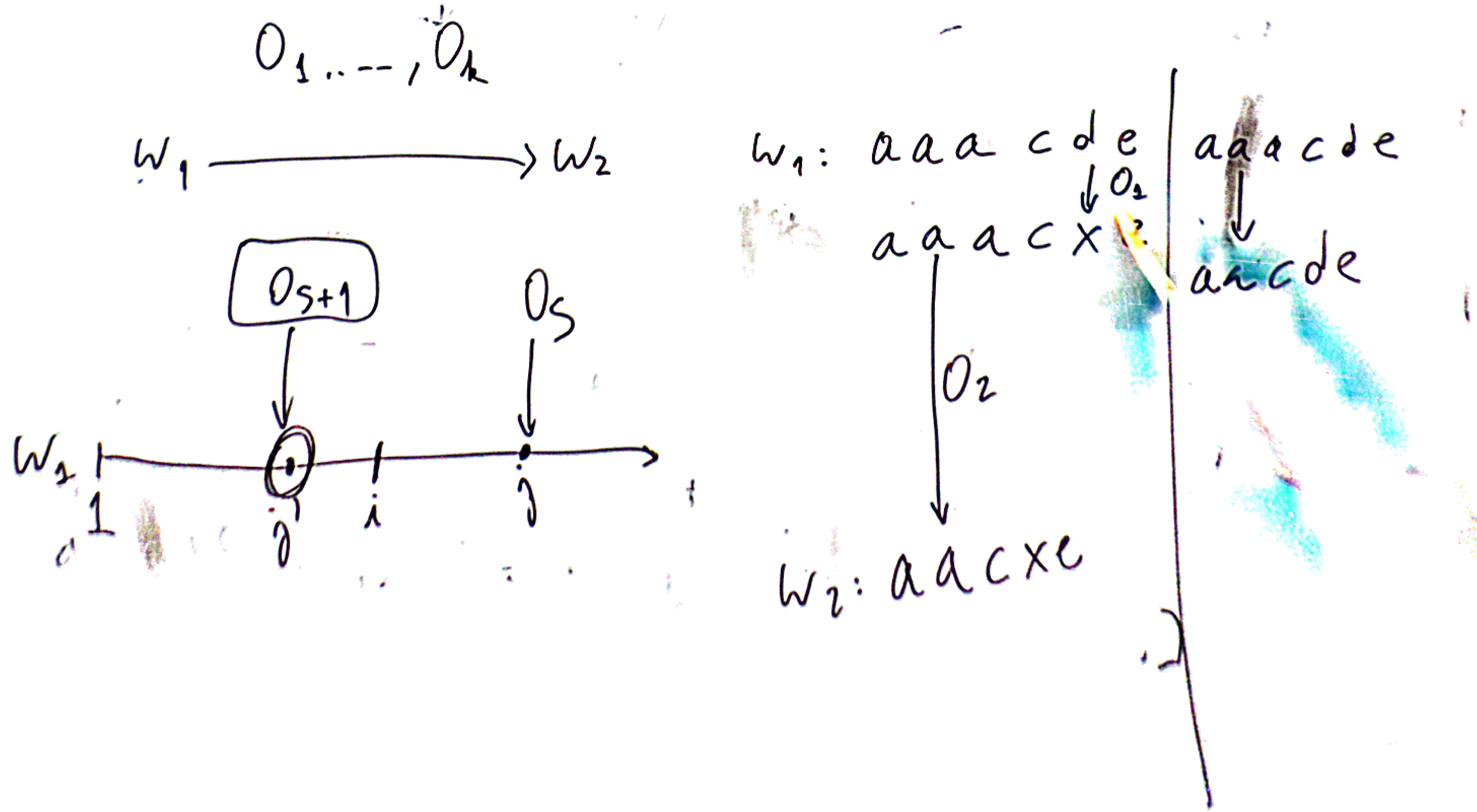
$W_1 \longrightarrow W_2$



w_1: a a a c d e

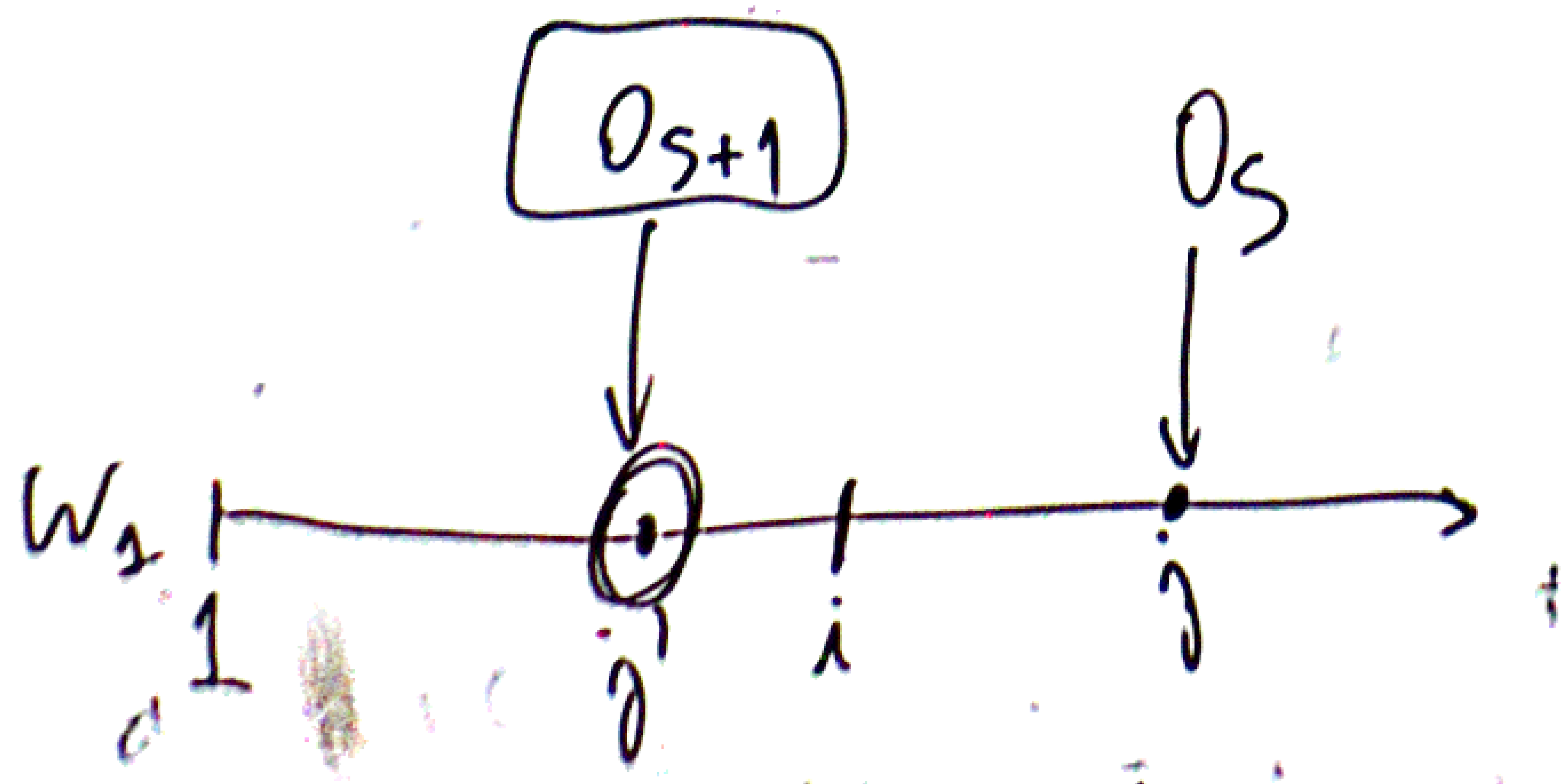
w_2: a b a c e

1 2 3 4 5 6


O1, ..., Ok
W1 → W2
Os+1
Os
W1
1
j
i
j
W1: aaacde
O1
aaacx
O2
W2: aacxe
aaacde
aacde

$O_1, \dots, O_k$

$W_1 \longrightarrow W_2$

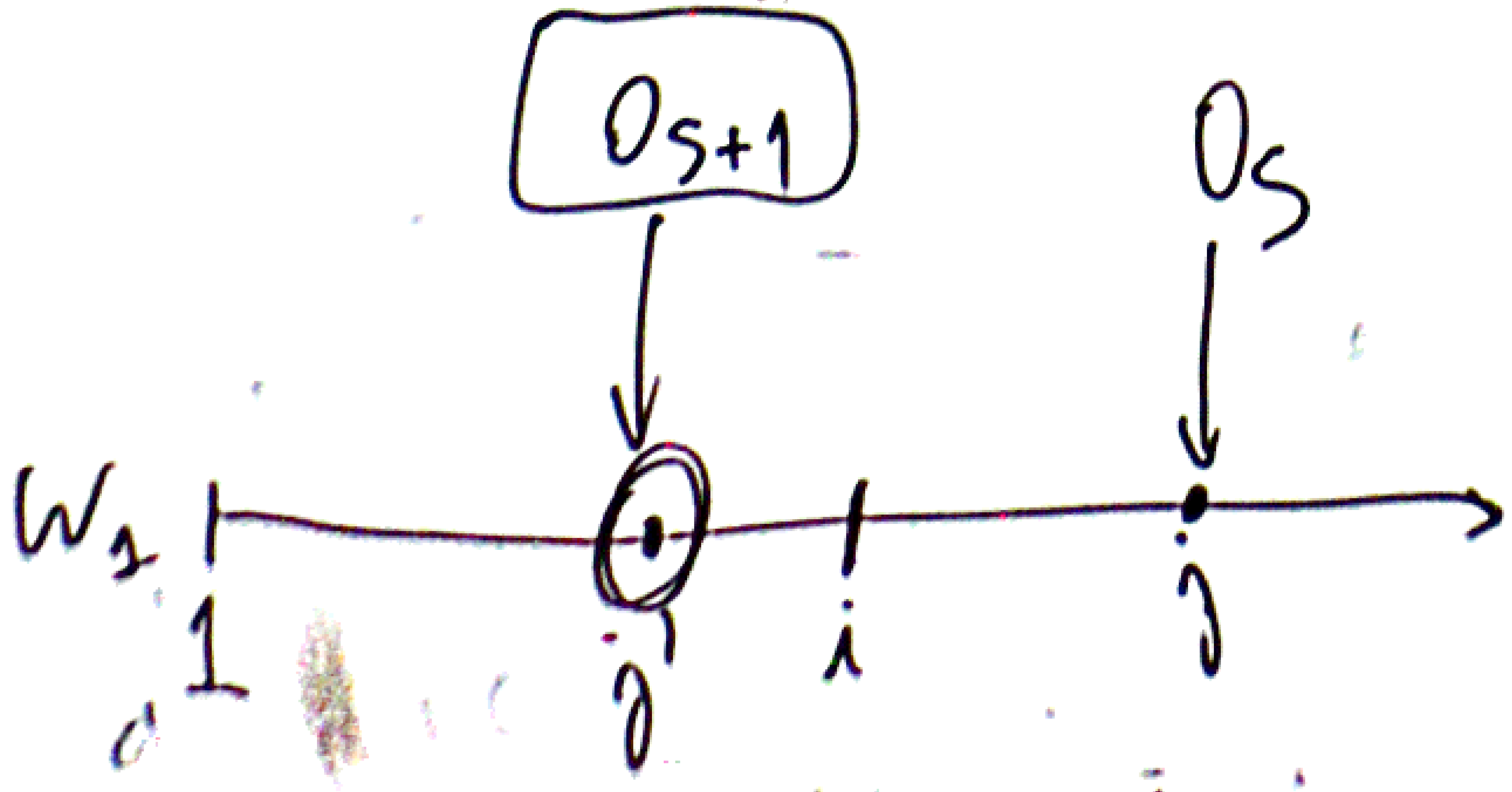


W_1: aaacde $\xrightarrow{O_1}$ aaacxe $\xrightarrow{O_2}$ W_2: aacxe

aaacde $\longrightarrow$ aacde

$O_1, \ldots, O_k$

$W_1 \longrightarrow W_2$

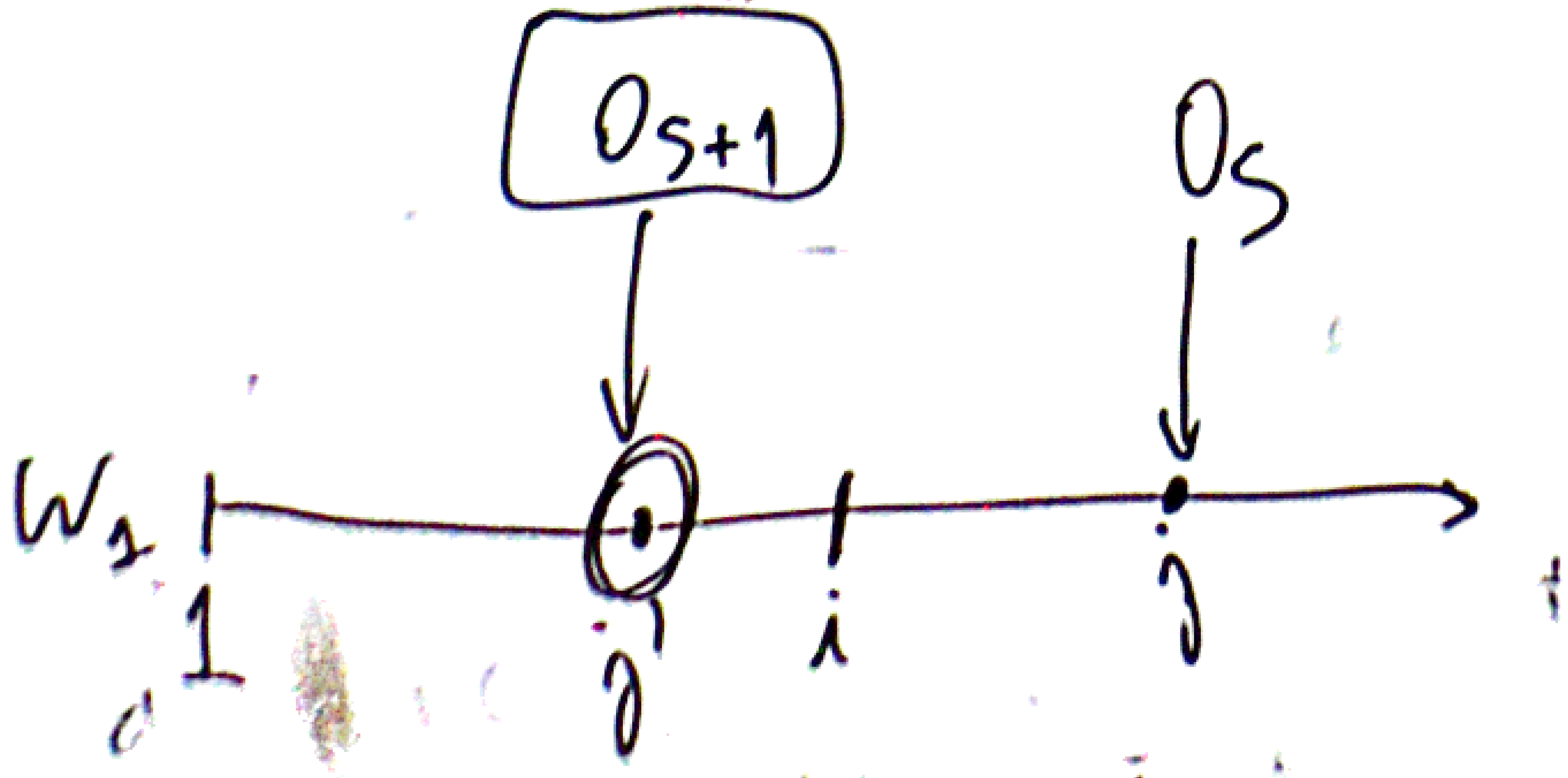


W_1: aaacde $\xrightarrow{O_1}$ aaacxe $\xrightarrow{O_2}$ W_2: aacxe

aaacde $\xrightarrow{O_1}$ aacde $\xrightarrow{x}$

$O_1, \ldots, O_k$

$W_1 \longrightarrow W_2$

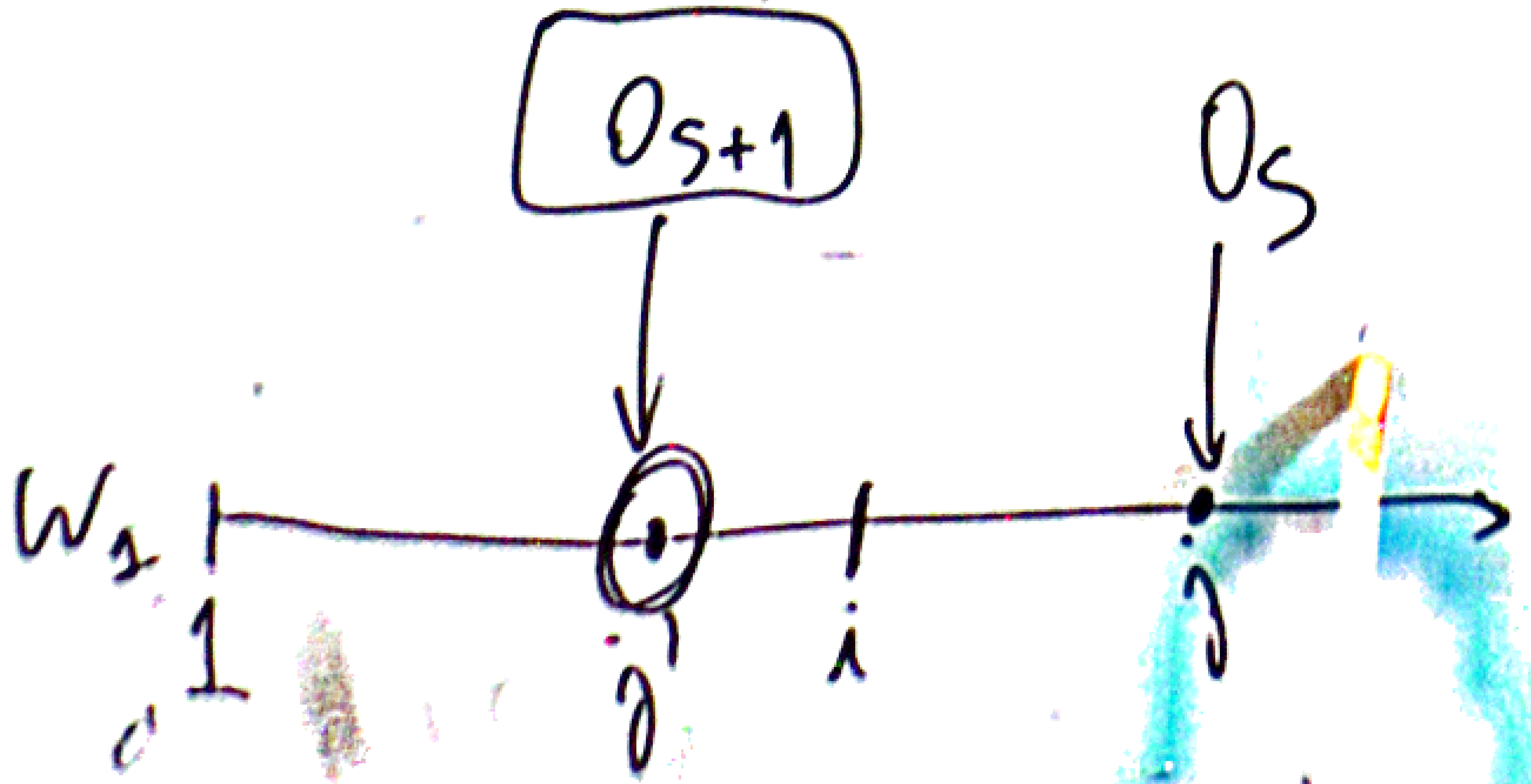


w_1: aaacde $\xrightarrow{O_1}$ aaacxe $\xrightarrow{O_2}$ w_2: aacxe

aaacde $\xrightarrow{O_1}$ aacde $\xrightarrow{X}$

$O_1, \dots, O_k$

$W_1 \longrightarrow W_2$



W_1: aaacde

$\downarrow O_1$

aaacxe

$\downarrow O_2$

W_2: aacxe

aaacde

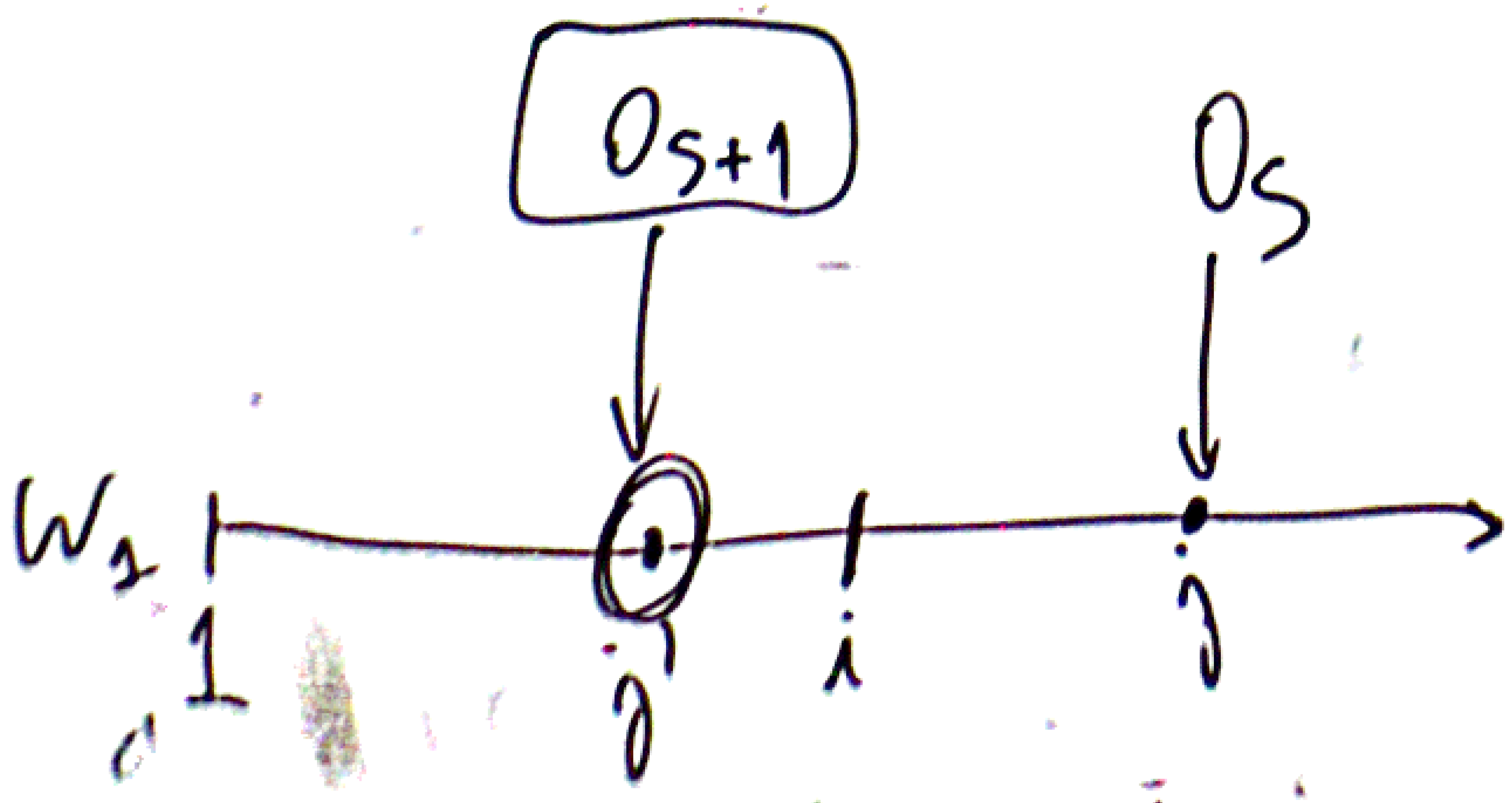
$\downarrow O_1$

aacde

$\downarrow$ x

$O_1, \dots, O_k$

$W_1 \longrightarrow W_2$

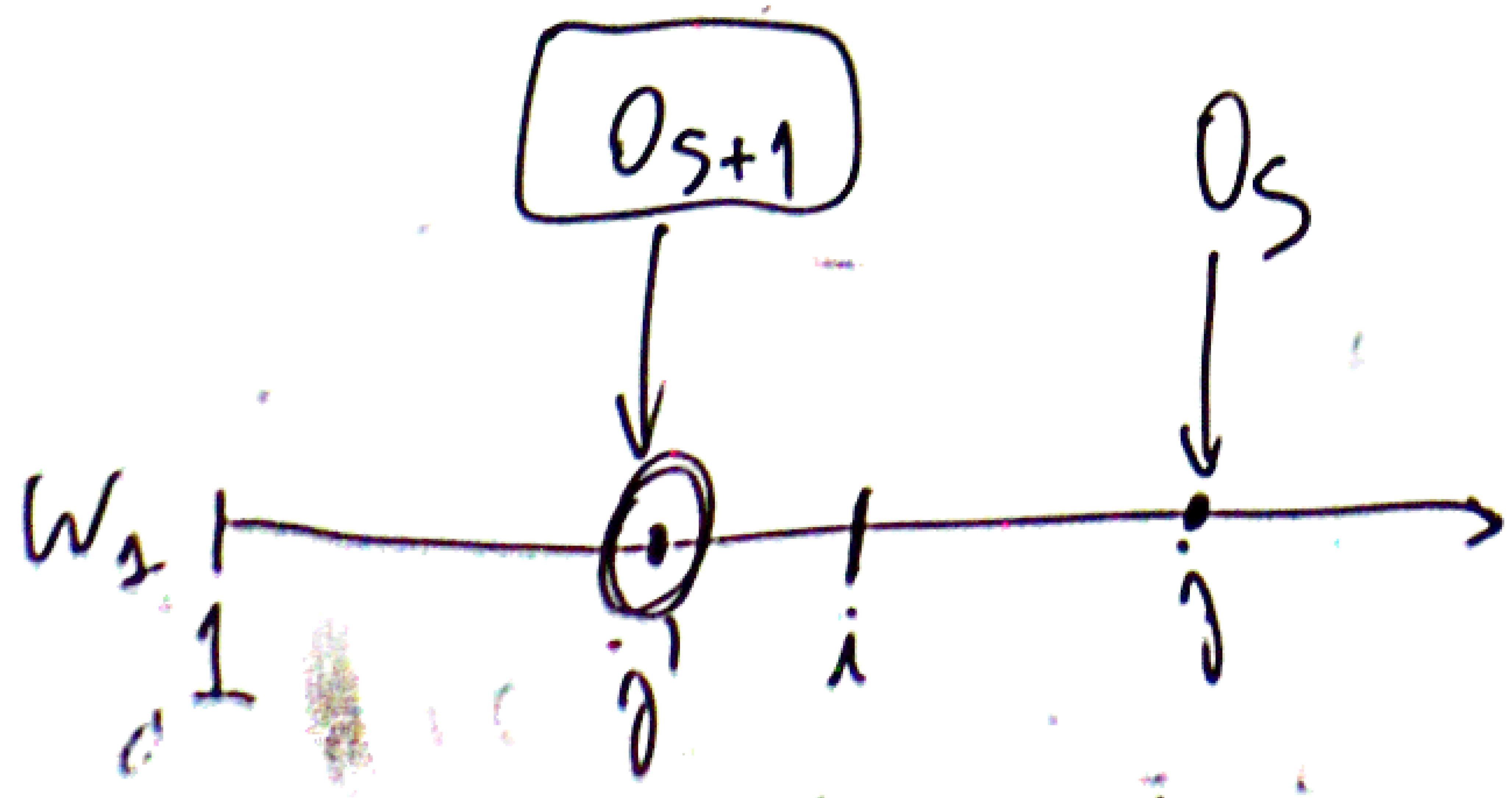


W_1: aaacde $\xrightarrow{O_1}$ aaacxe $\xrightarrow{O_2}$ W_2: aacxe

aa·cde $\xrightarrow{O_1}$ aacde $\xrightarrow{x}$

$O_1, \ldots, O_k$

$w_1 \longrightarrow w_2$



w_1: aaacde

$\downarrow O_1$

aaacxe

$\downarrow O_2$

w_2: aacxe

aa~~a~~cde

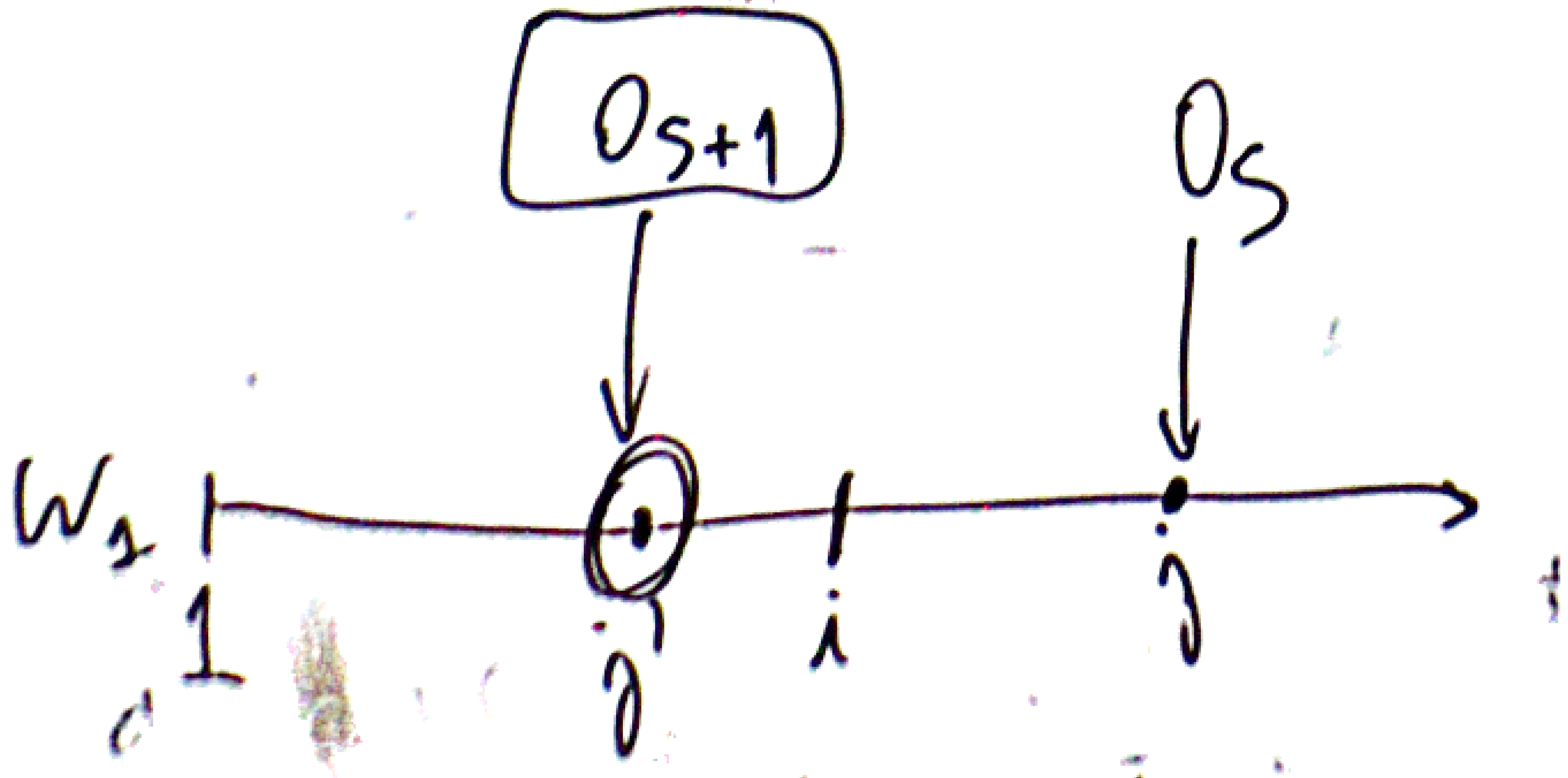
$\downarrow O_1$

aacde

$\downarrow x$

$O_1, \dots, O_k$

$W_1 \longrightarrow W_2$

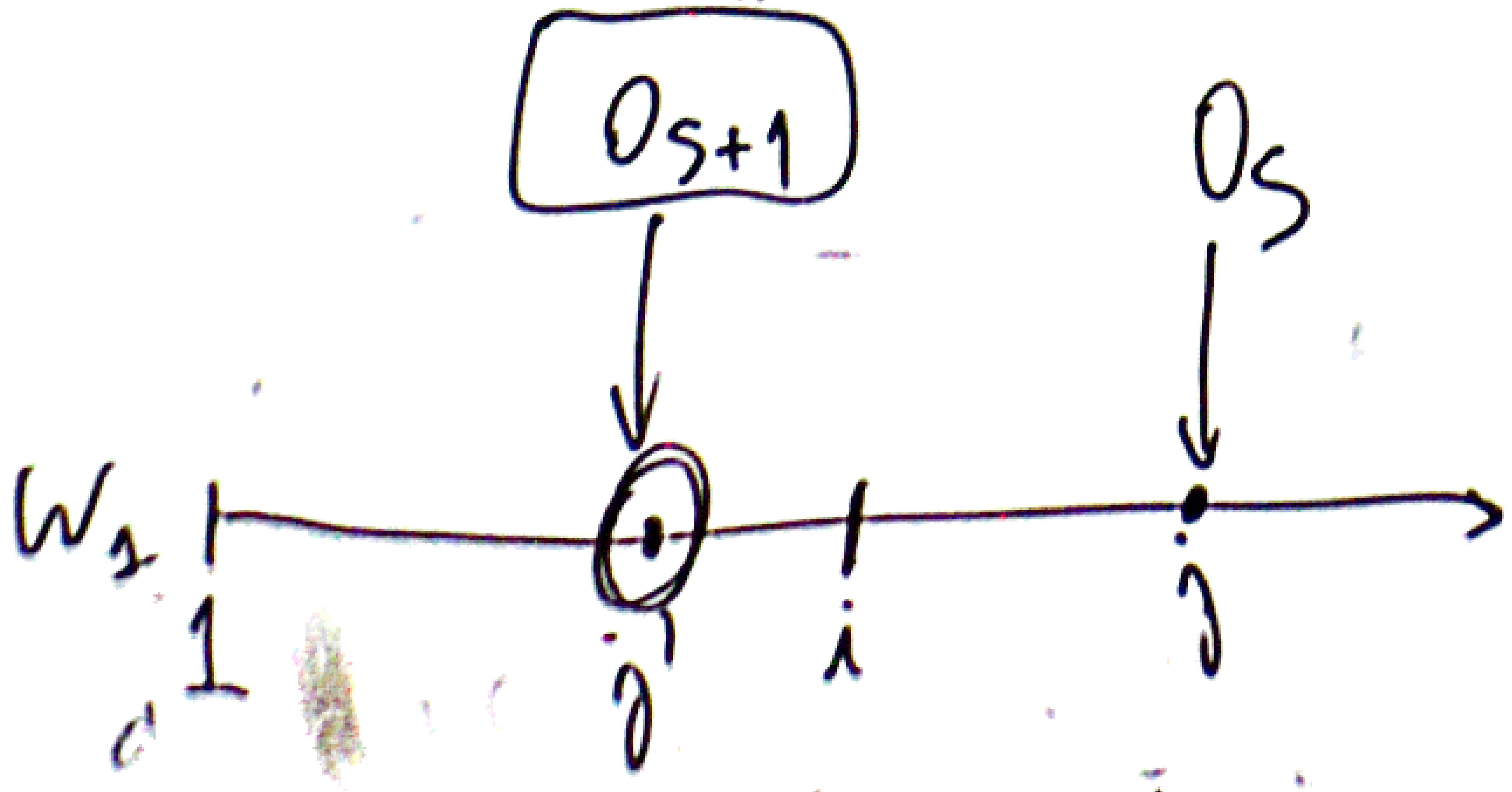


W_1: aaacde $\xrightarrow{O_1}$ aaacxe $\xrightarrow{O_2}$ W_2: aacxe

aaxcde $\xrightarrow{O_1}$ aacde $\xrightarrow{x}$

$O_1, \dots, O_k$

$w_1 \longrightarrow w_2$

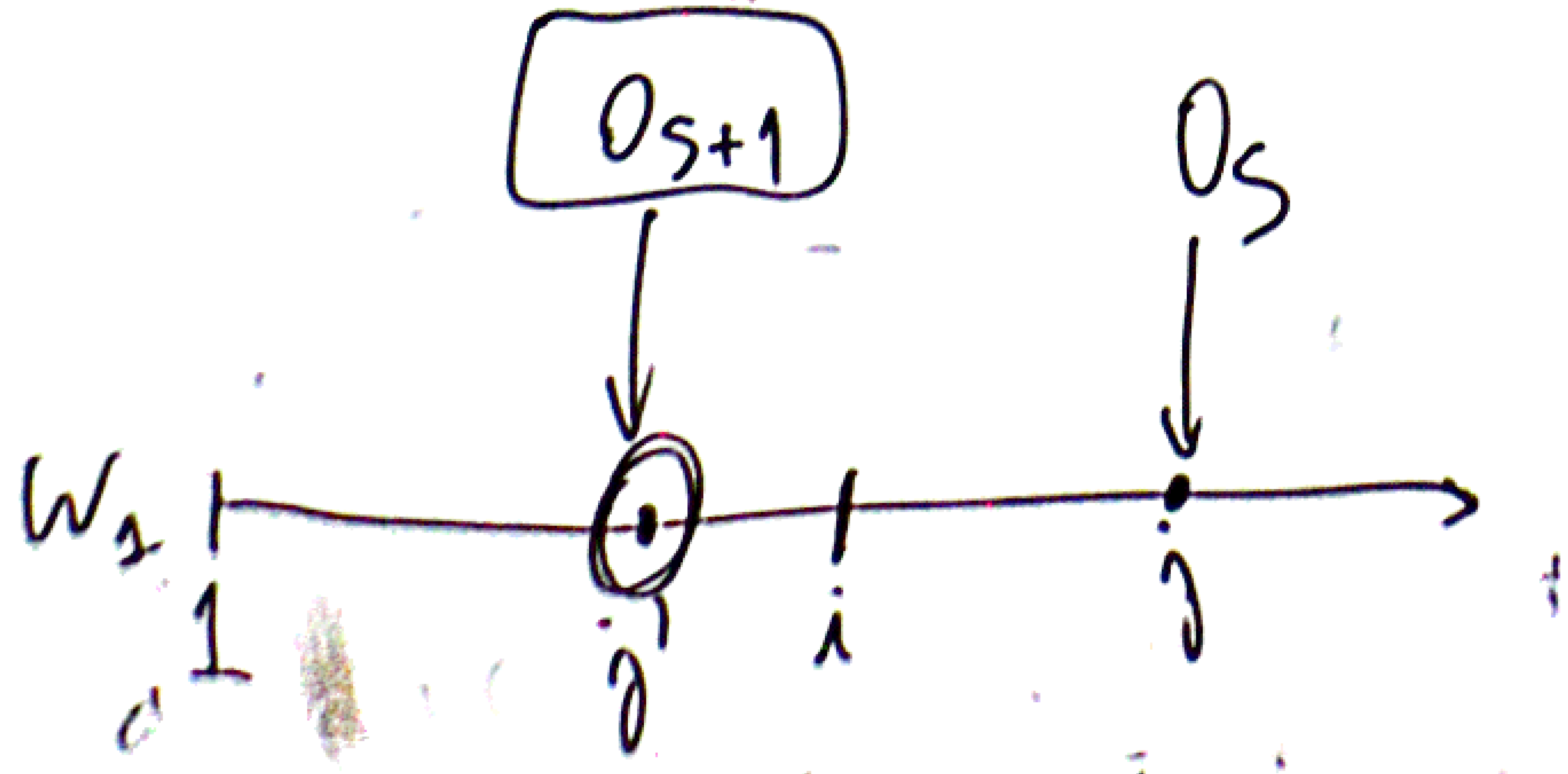


$$w_1: \text{aaacde} \xrightarrow{O_1} \text{aaacxe} \xrightarrow{O_2} w_2: \text{aacxe}$$

$$\text{aaacde} \xrightarrow{O_1} \text{aacde} \xrightarrow{x}$$

$O_1, \dots, O_k$

$w_1 \longrightarrow w_2$



w_1: aaacde $\xrightarrow{O_1}$ aaacxe $\xrightarrow{O_2}$ w_2: aacxe

aaacde $\xrightarrow{O_1}$ aacde $\xrightarrow{x}$

$W_1[1,i]$ $\longrightarrow$ $W_2[1,j]$

$O_1, \ldots, O_\ell$

$O'_1, \ldots, O'_m$

$m < \ell$

$W_1 \longrightarrow W_2$

$O_1, \ldots, O_k$

$\cancel{O_1, \ldots, O_\ell}, O_{\ell+1}, \ldots, O_k$

$O'_1, \ldots, O'_m, O_{\ell+1}, \ldots, O_k$

$$\begin{array}{c} W_1[1,i] \\ \Big\downarrow \\ W_2[1,j] \end{array} \qquad \begin{array}{l} o_1,\dots,o_\ell \\ \quad o'_1,\dots,o'_m \\ \qquad m<\ell \end{array}$$

$$\begin{array}{c} W_1 \\ \Big\downarrow \\ W_2 \end{array} \qquad o_1,\dots,o_k$$

$$\cancel{o_1,\dots,o_\ell}, o_{\ell+1},\dots,o_k$$

$$o'_1,\dots,o'_m, o_{\ell+1},\dots,o_k$$

$$\begin{array}{ccc} W_1 & \qquad & W_1[1,i] \\ \downarrow & & \downarrow \\ W_2 & & W_2[1,j] \end{array}$$

$$\begin{tikzcd} W_1 \arrow[d] & W_1[1,i] \arrow[d] \\ W_2 & W_2[1,j] \end{tikzcd}$$

$$
\begin{tikzcd}
W_1 \arrow[d] & W_1[1,i] \arrow[d] \\
W_2 & W_2[1,j]
\end{tikzcd}
$$

$$W_1 \longrightarrow W_2$$

$$W_1[1,i] \longrightarrow W_2[1,j]$$

$|W_1| = m$

$|W_2| = n$

$$\begin{array}{ccc} W_1 & \quad & W_1[1,i] \\ \downarrow & & \downarrow \\ W_2 & & W_2[1,j] \end{array}$$

$|W_1| = m$

$|W_2| = n$

$ed(i,j) =$

$ed(W_1[1,i], W_2[1,j])$

$$
\begin{array}{ccc}
W_1 & & W_1[1,i] \\
\big\downarrow & & \big\downarrow \\
W_2 & & W_2[1,j]
\end{array}
$$

$$|W_1| = m$$

$$|W_2| = n$$

$$ed(i,j) =$$

$$ed(W_1[1,i], W_2[1,j])$$

$$ed(i,j) = \Bigg\{$$

$|W_1| = m$

$|W_2| = n$

$ed(i,j) =$

$ed(W_1[1,i], W_2[1,j])$

$$ed(i,j) = \begin{cases} & i=0 \end{cases}$$

$|W_1| = m$

$|W_2| = n$

$ed(i,j) =$

$ed(W_1[1,i], W_2[1,j])$

$$\underset{\varepsilon}{\overset{\|}{W_1[1,0]}}$$

$$ld(i,j) = \begin{cases} j & i=0 \\ i & j=0 \\ & i>0, \\ & j>0 \end{cases}$$

$|W_1| = m$

$|W_2| = n$

$ld(i,j) =$

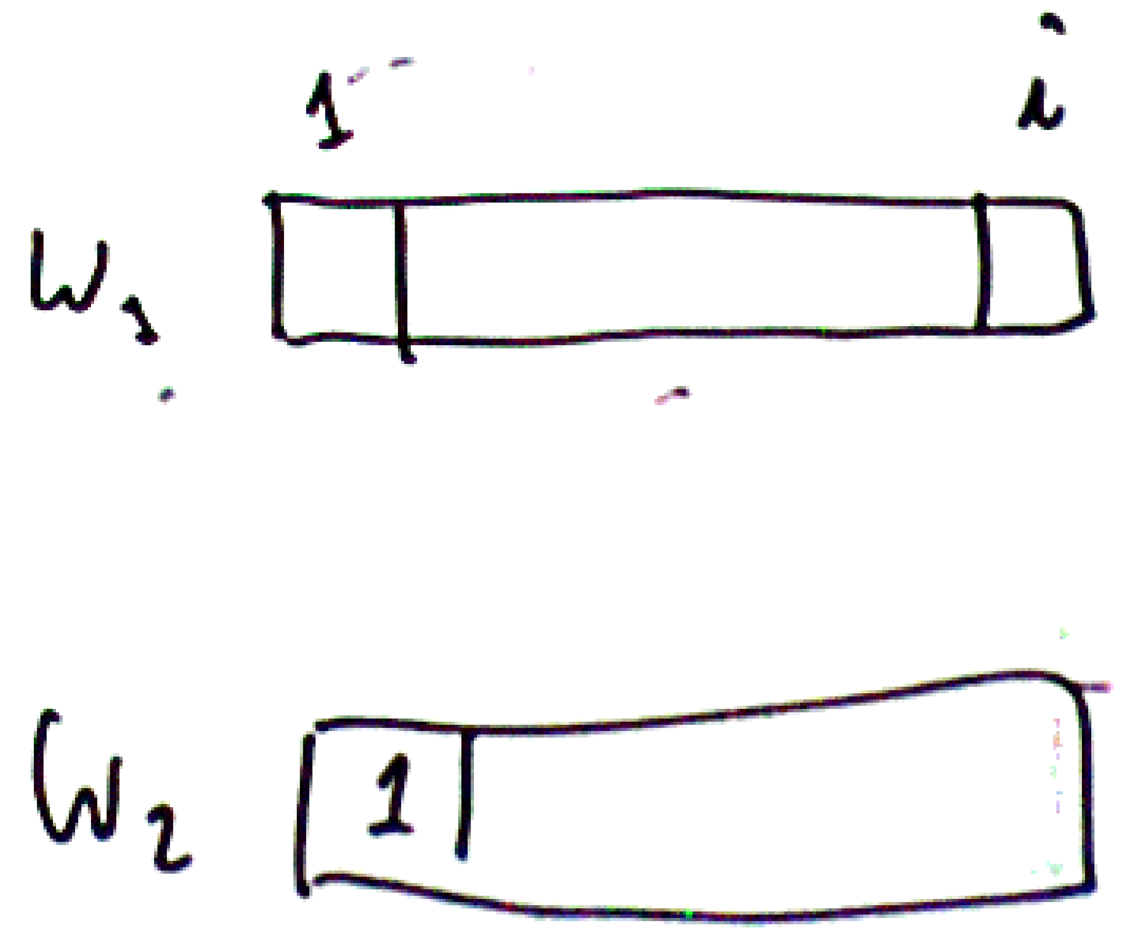
$ld(W_1[1,i], W_2[1,j])$

$W_1[1,0]$

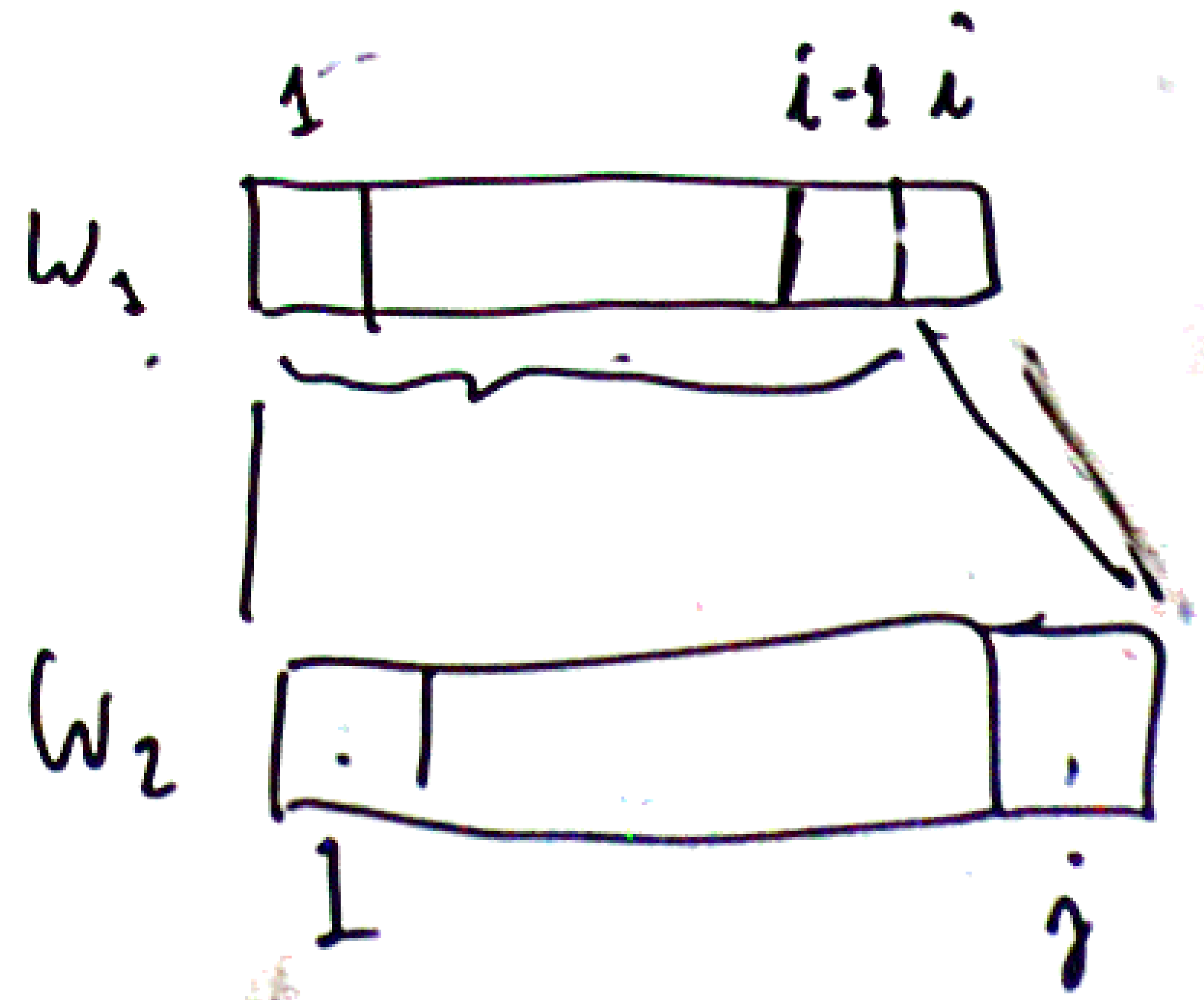
$\shortparallel$

ε

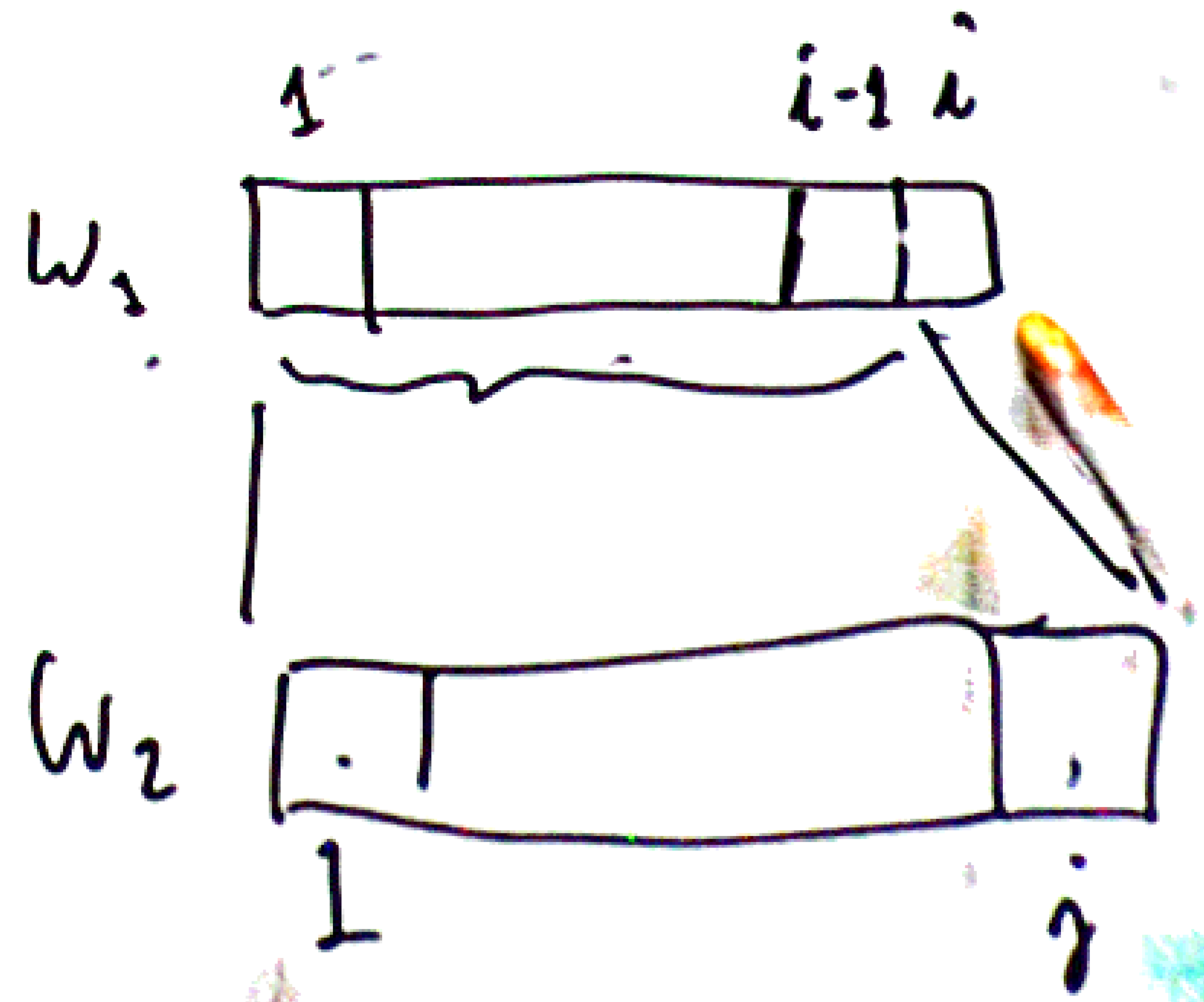
$$ld(i,j) = \begin{cases} j & i=0 \\ i & j=0 \\ & i>0, \; j>0 \end{cases}$$



$$
ld(i,j) = \begin{cases} j & i = 0 \\ i & j = 0 \\ & i > 0, \; j > 0 \end{cases}
$$

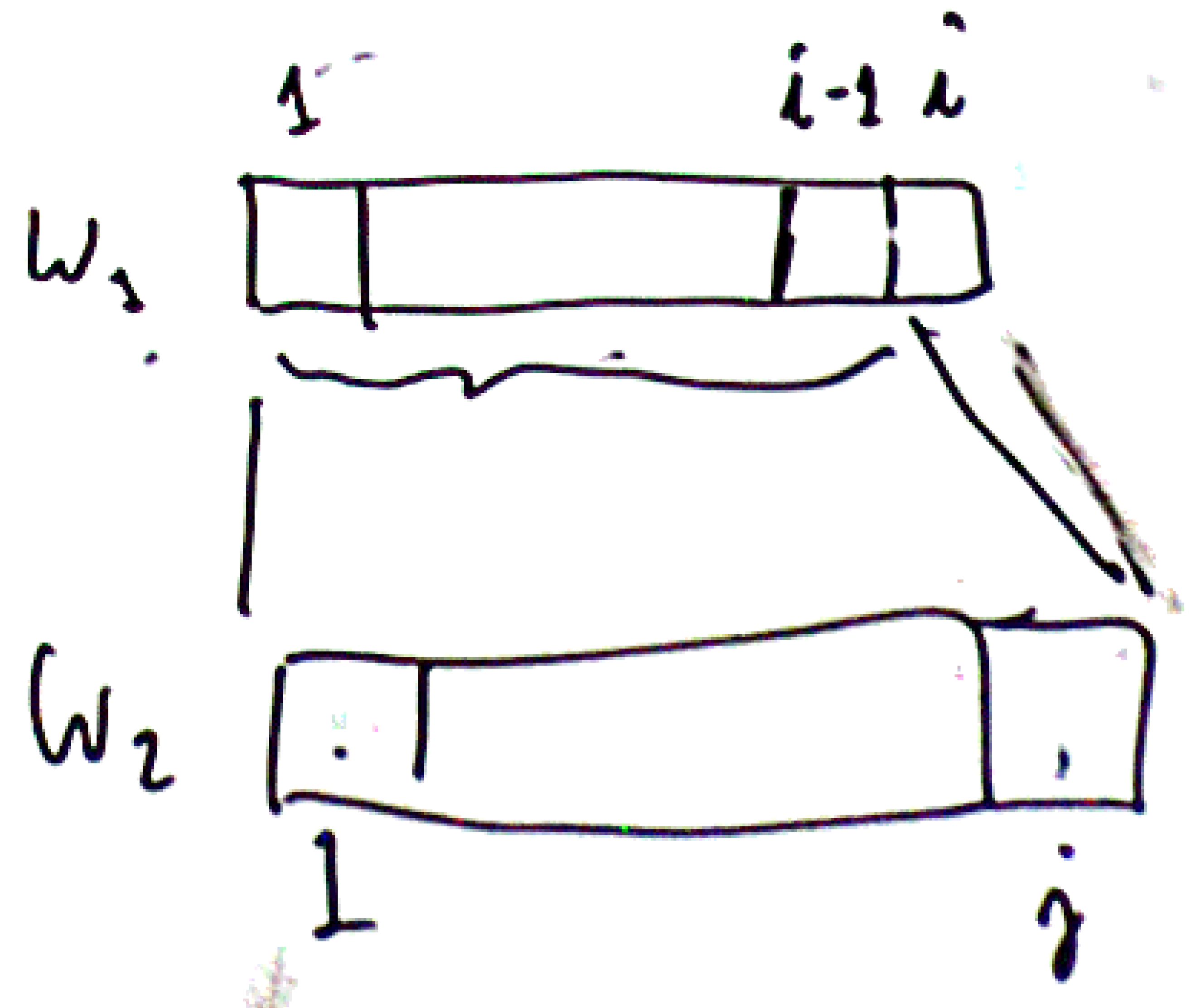


$$ld(i,j) = \begin{cases} j & i=0 \\ i & j=0 \\ & i>0,\ j>0 \end{cases}$$



$$w_2[1,i-1) \longrightarrow w_2[1,j] + 1$$

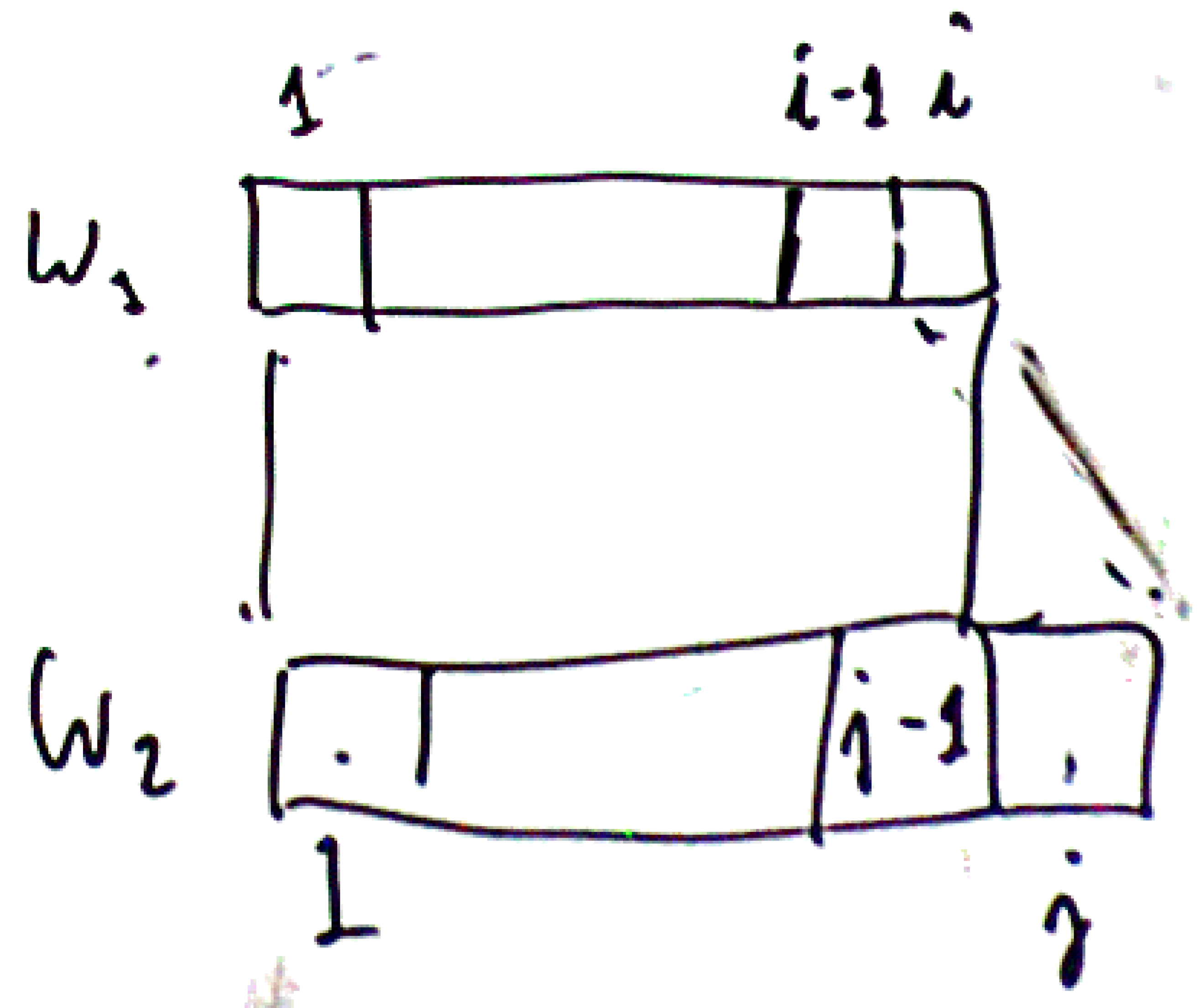
$$ld(i,j) = \begin{cases} j & i=0 \\ i & j=0 \\ & i>0,\ j>0 \end{cases}$$



$ld(i-1,j)+1$

$ld(i,j-1)$

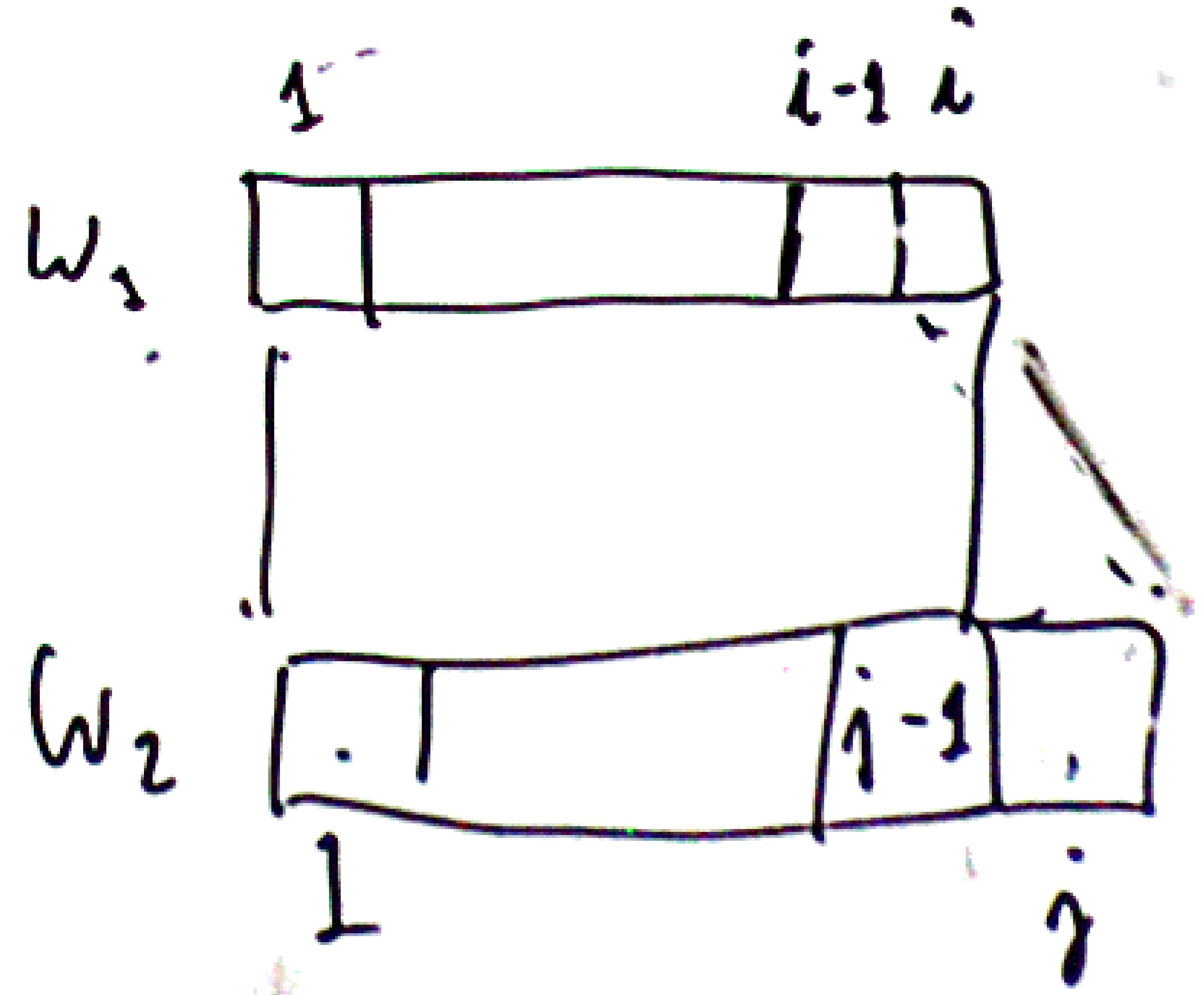
$$ld(i,j) = \begin{cases} j & i=0 \\ i & j=0 \\ & i>0, \; j>0 \end{cases}$$



$ld(i-1,j)+1$

$ld(i,j-1)$

$$ed(i,j) = \begin{cases} j & i=0 \\ i & j=0 \\ & i>0,\ j>0 \end{cases}$$

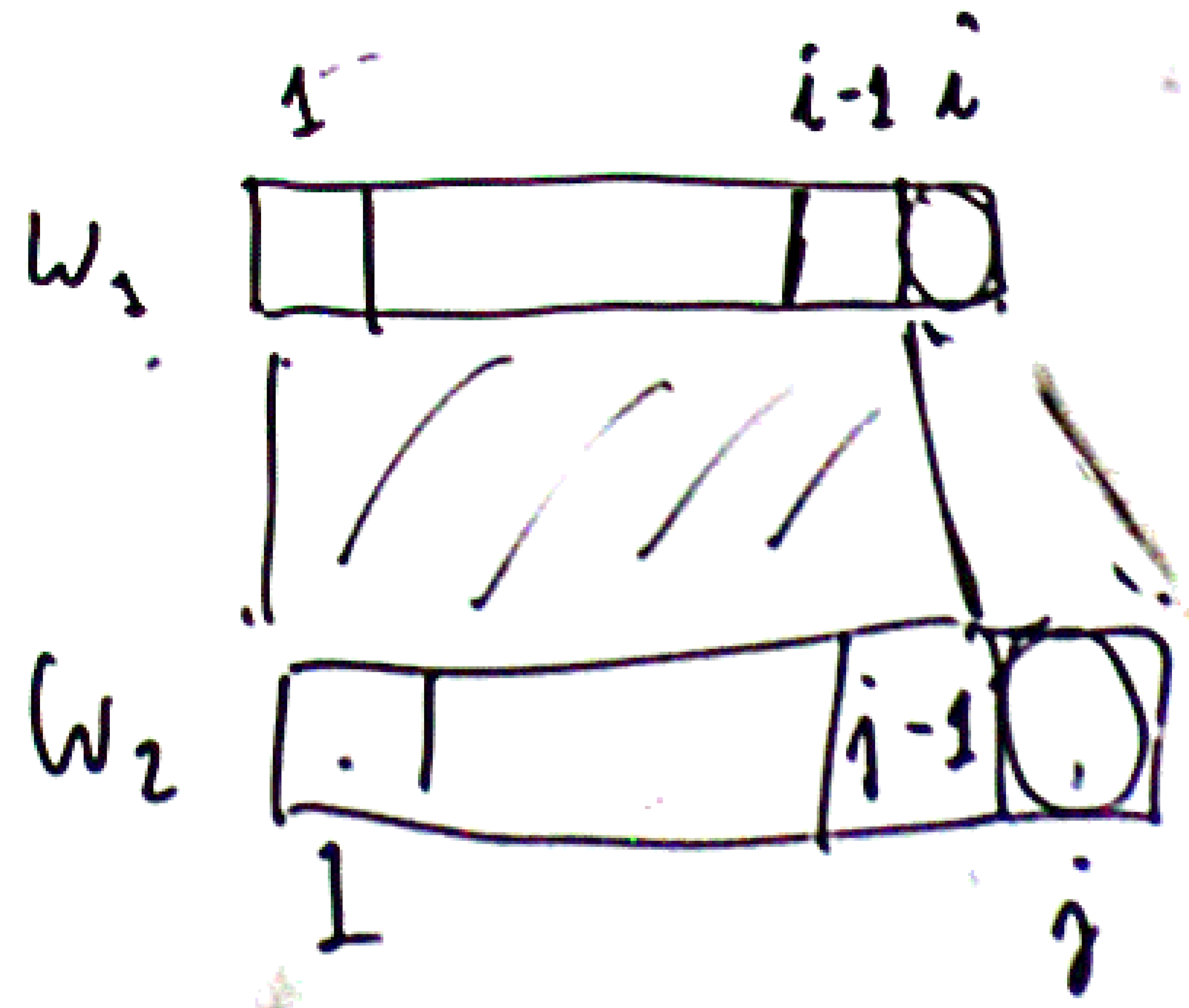


$ed(i-1,j)+1$

$ed(i,j-1)+1$

$ed(i-1,j-1)+$

$$ed(i,j) = \begin{cases} j & i=0 \\ i & j=0 \\ & i>0,\ j>0 \end{cases}$$

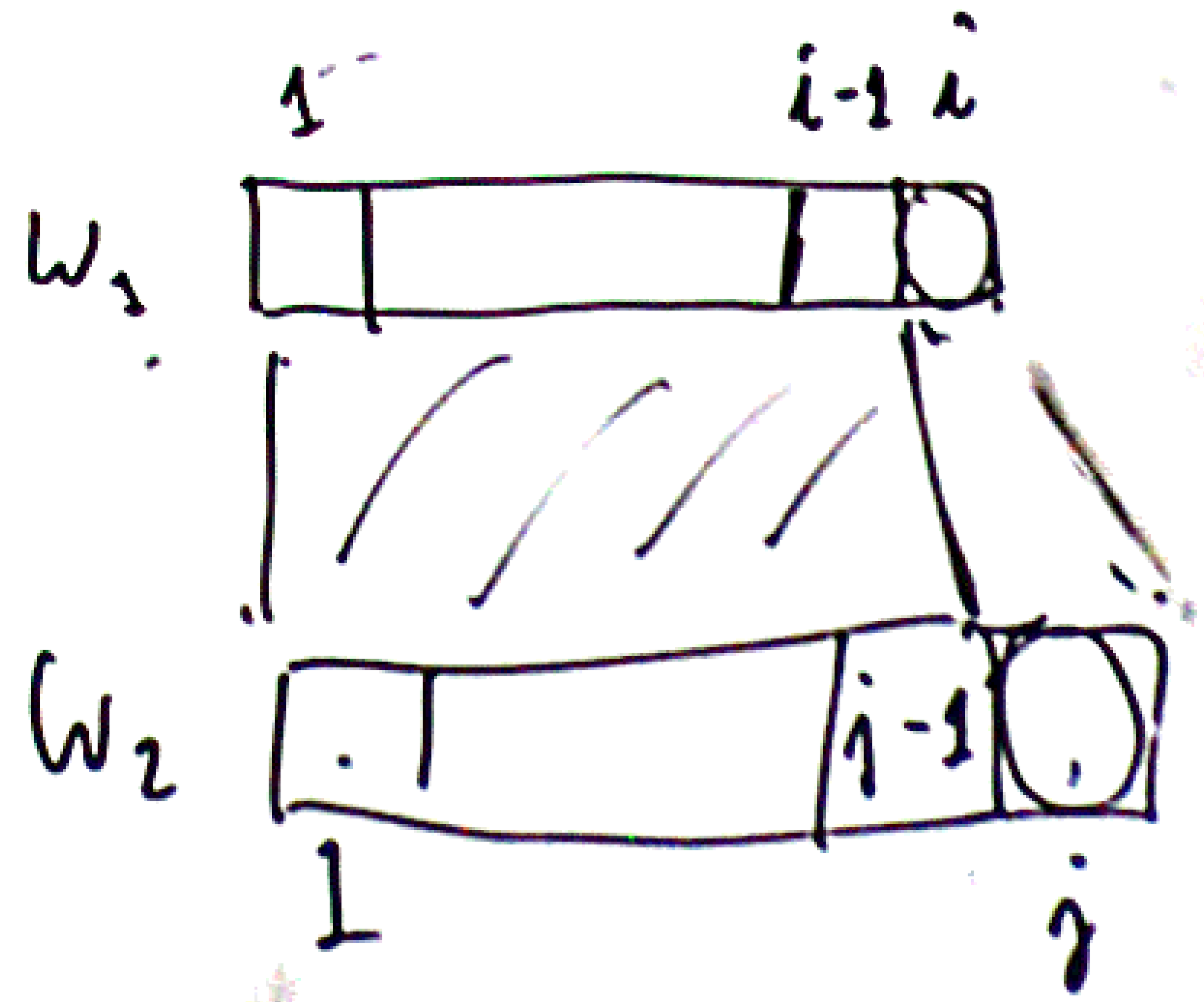


$ed(i-1,j)+1$

$ed(i,j-1)+1$

$ed(i-1,j-1)+$

$$ld(i,j) = \begin{cases} j & i=0 \\ i & j=0 \\ & i>0, \; j>0 \end{cases}$$

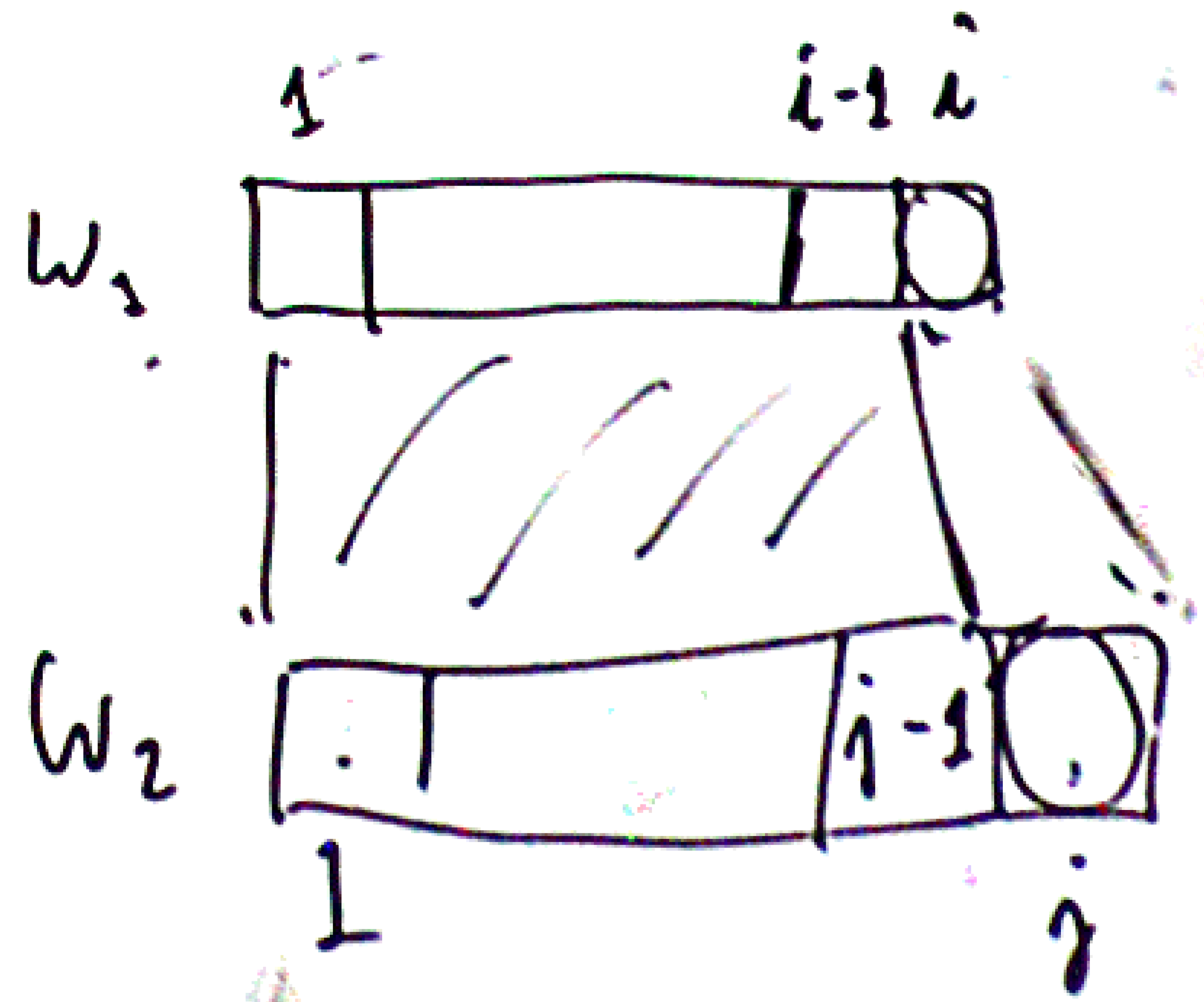


$ld(i-1,j)+1$

$ld(i,j-1)+1$

$ld(i-1,j-1)+$

$$ed(i,j)=\begin{cases} j & i=0\\ i & j=0\\ & i>0,\ j>0 \end{cases}$$



$ed(i-1,j)+1$

$ed(i,j-1)+1$

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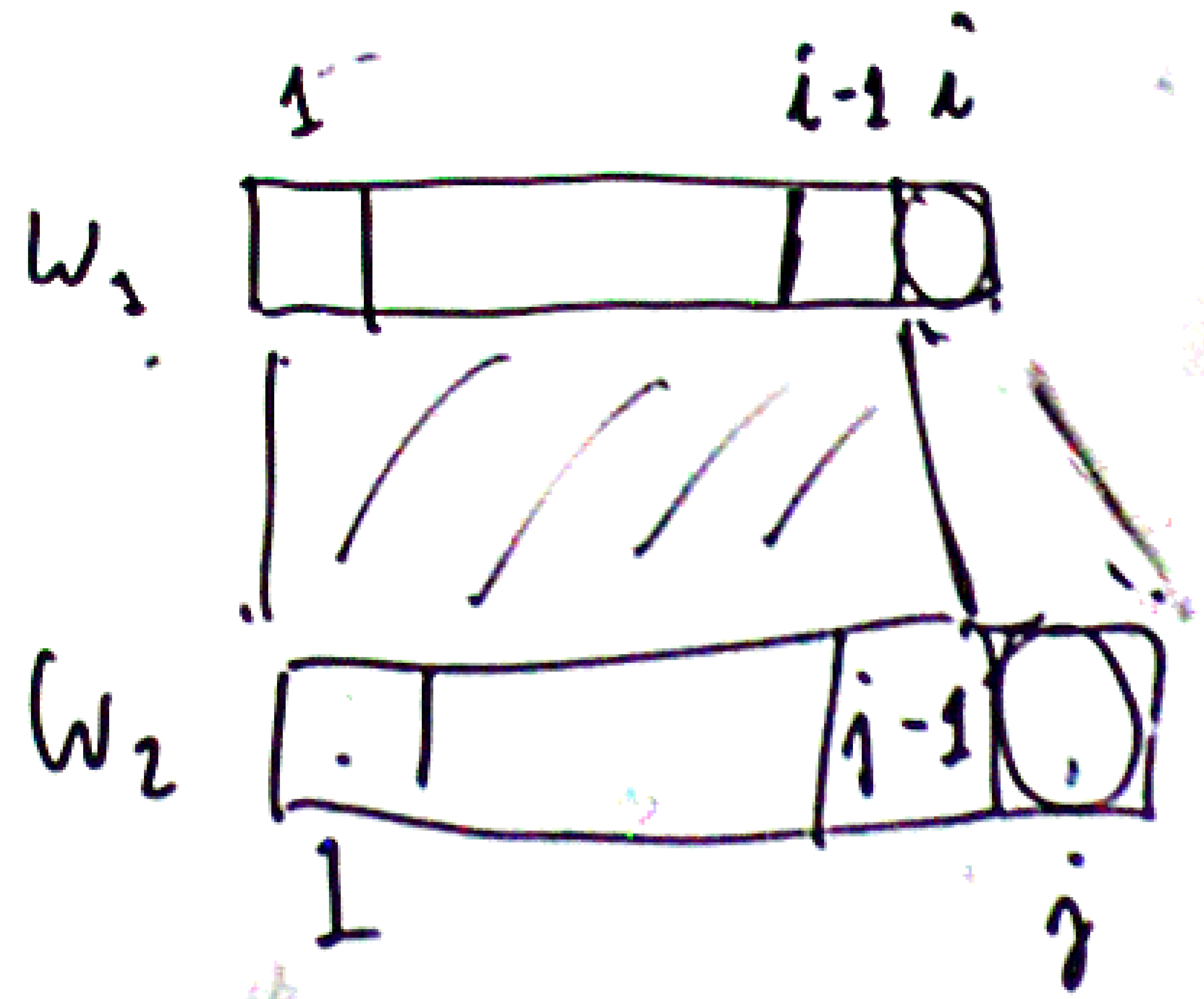
$$ed(i,j) = \begin{cases} j & i=0 \\ i & j=0 \\ & i>0,\ j>0 \end{cases}$$

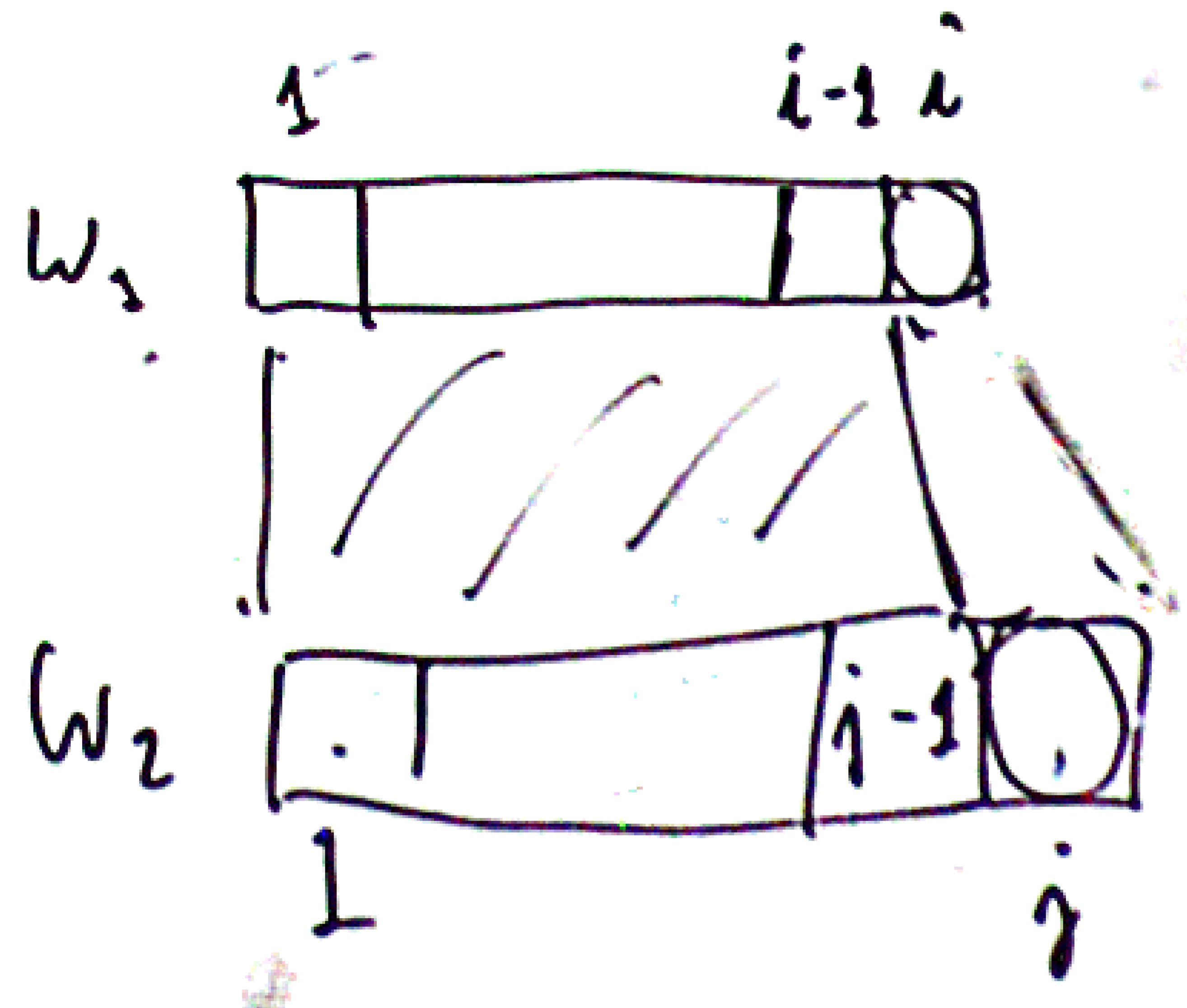


$ed(i-1,j) + 1$

$ed(i,j-1) + 1$

$ed(i-1,j-1) +$

$$ed(i,j) = \begin{cases} j & i=0 \\ i & j=0 \\ & i>0,\ j>0 \end{cases}$$



$ed(i-1,j)+1$

$ed(i,j-1)+1$

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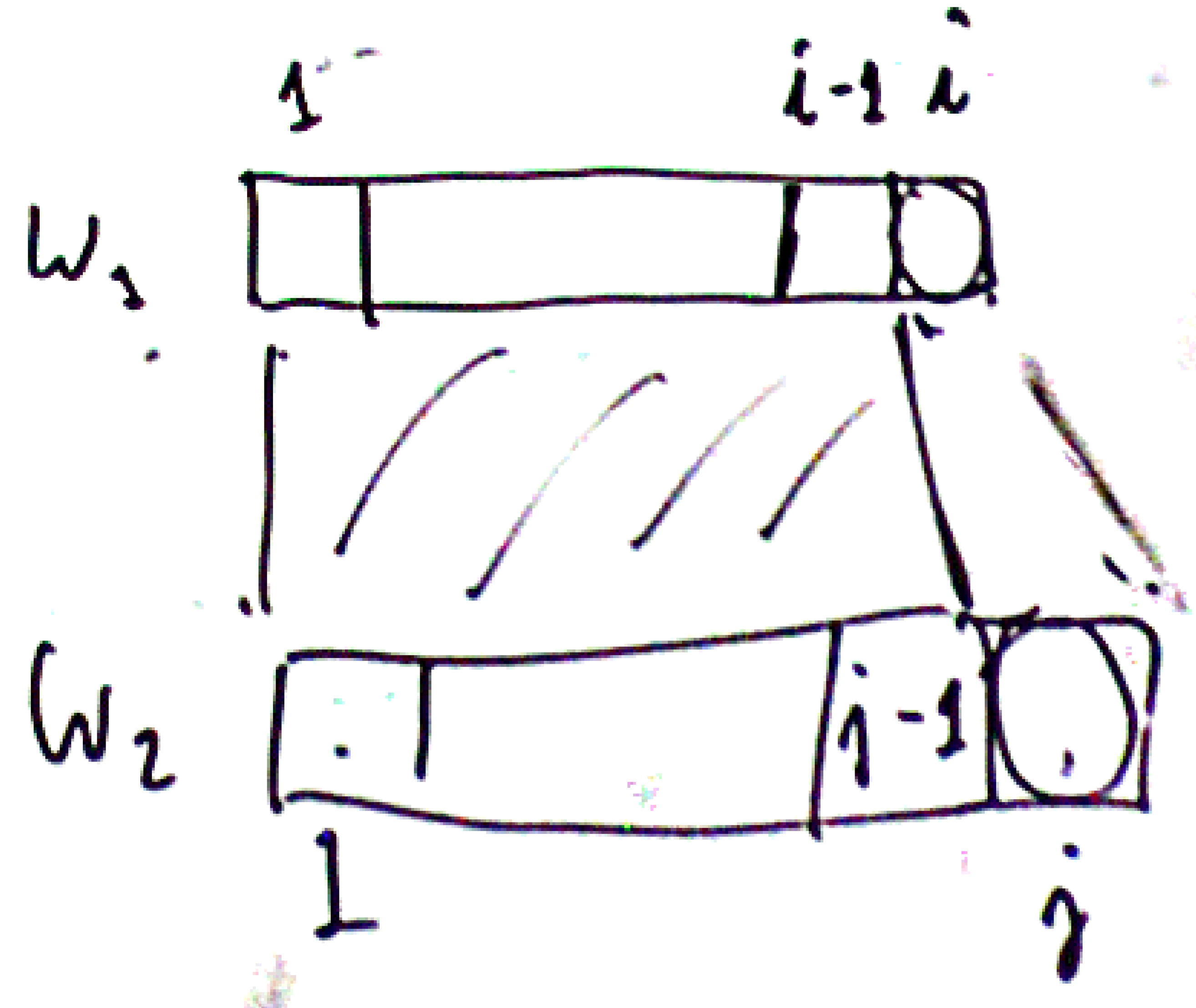
ed(i,j) = \begin{cases} j & i = 0 \\ i & j = 0 \\ & i > 0,\ j > 0 \end{cases}
$$



$ed(i-1, j) + 1$

$ed(i, j-1) + 1$

$ed(i-1, j-1) +$

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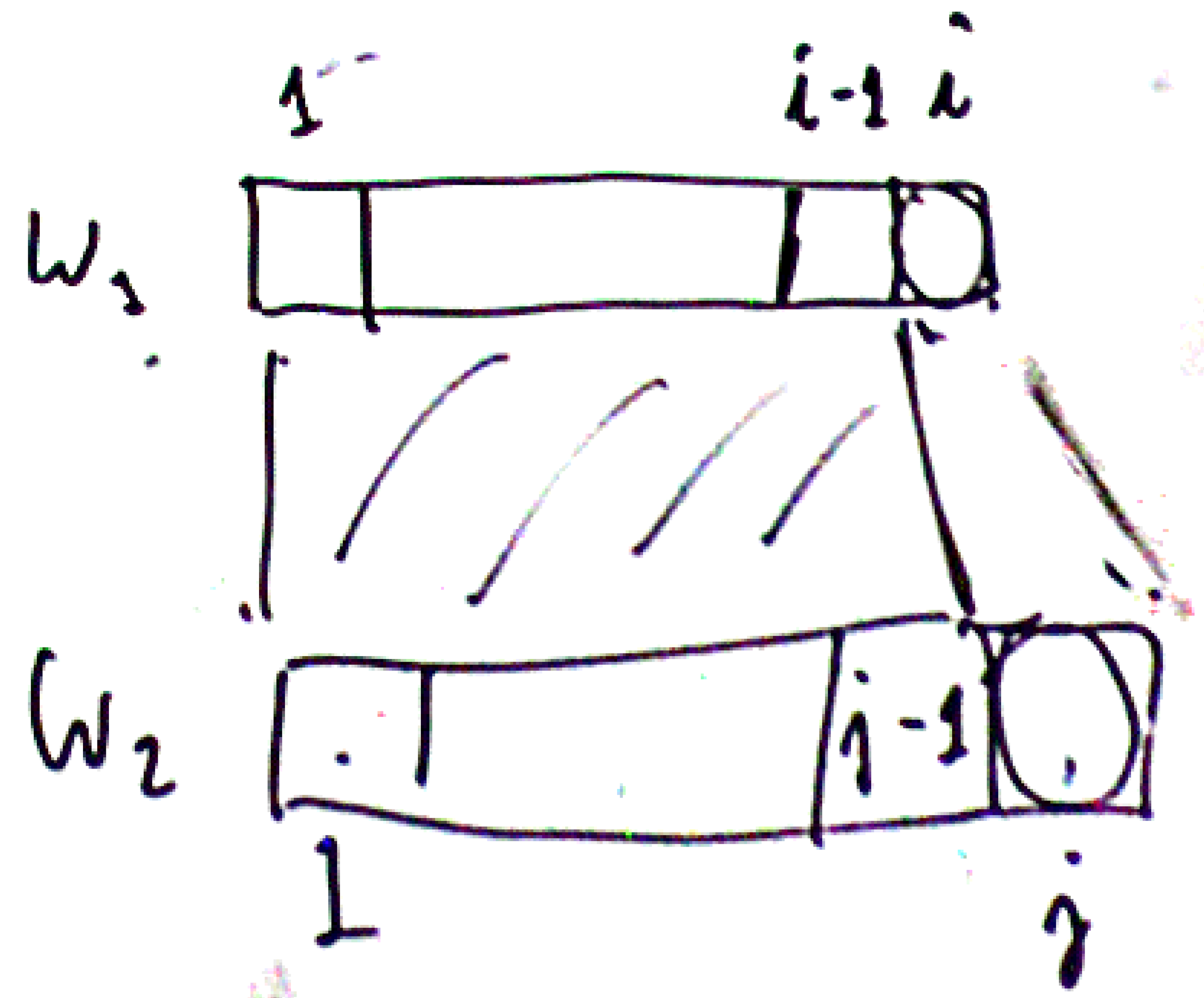

$ed(i-1,j)+1$

$ed(i,j-1)+1$

$ed(i-1,j-1)+$

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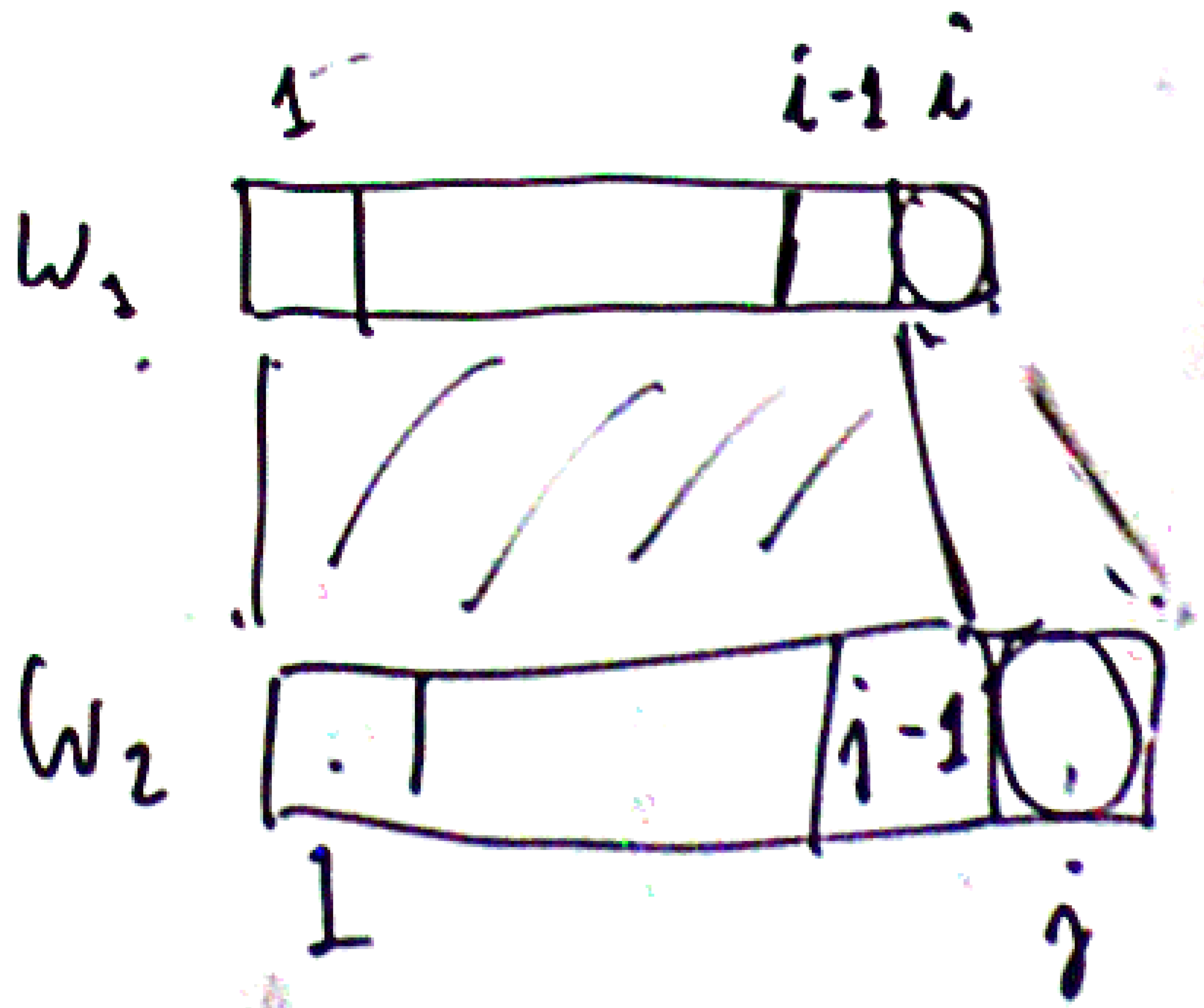
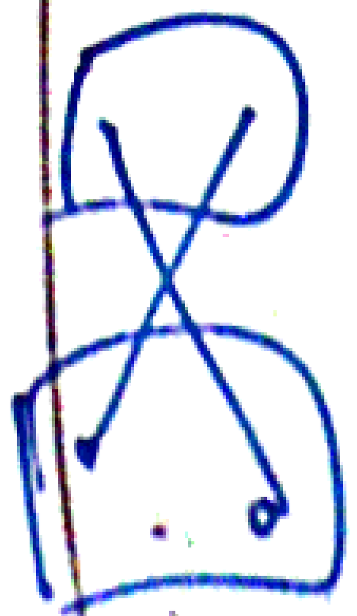


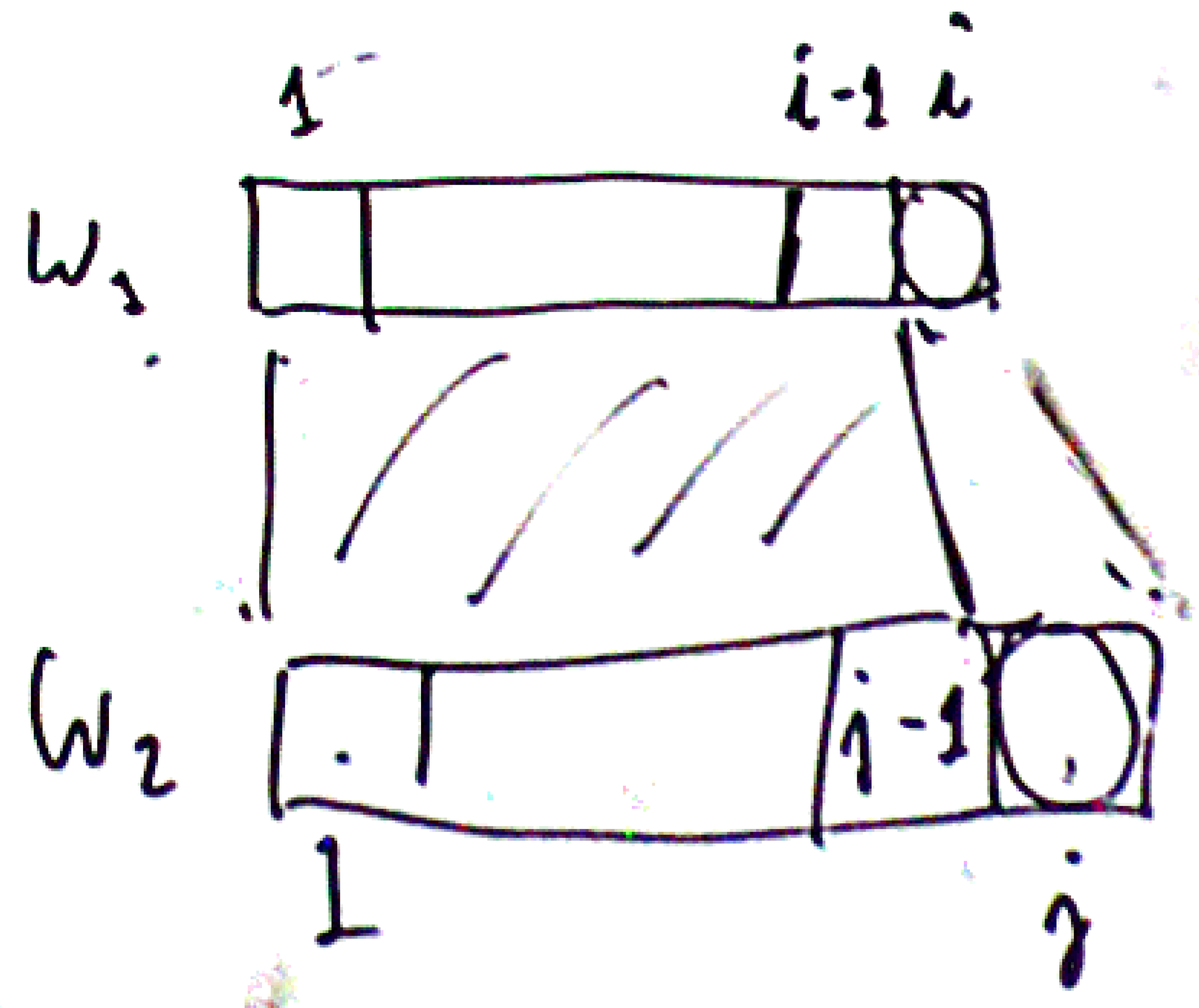


$ed(i-1, j) + 1$

$ed(i, j-1) + 1$

$ed(i-1, j-1) +$

$$
ed(i,j) = \begin{cases} j & i=0 \\ i & j=0 \\ & i>0,\ j>0 \end{cases}
$$



$ed(i-1,j)+1$

$ed(i,j-1)+1$

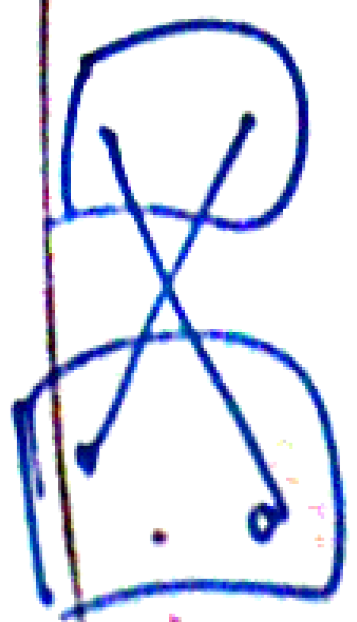
$ed(i-1,j-1)+$

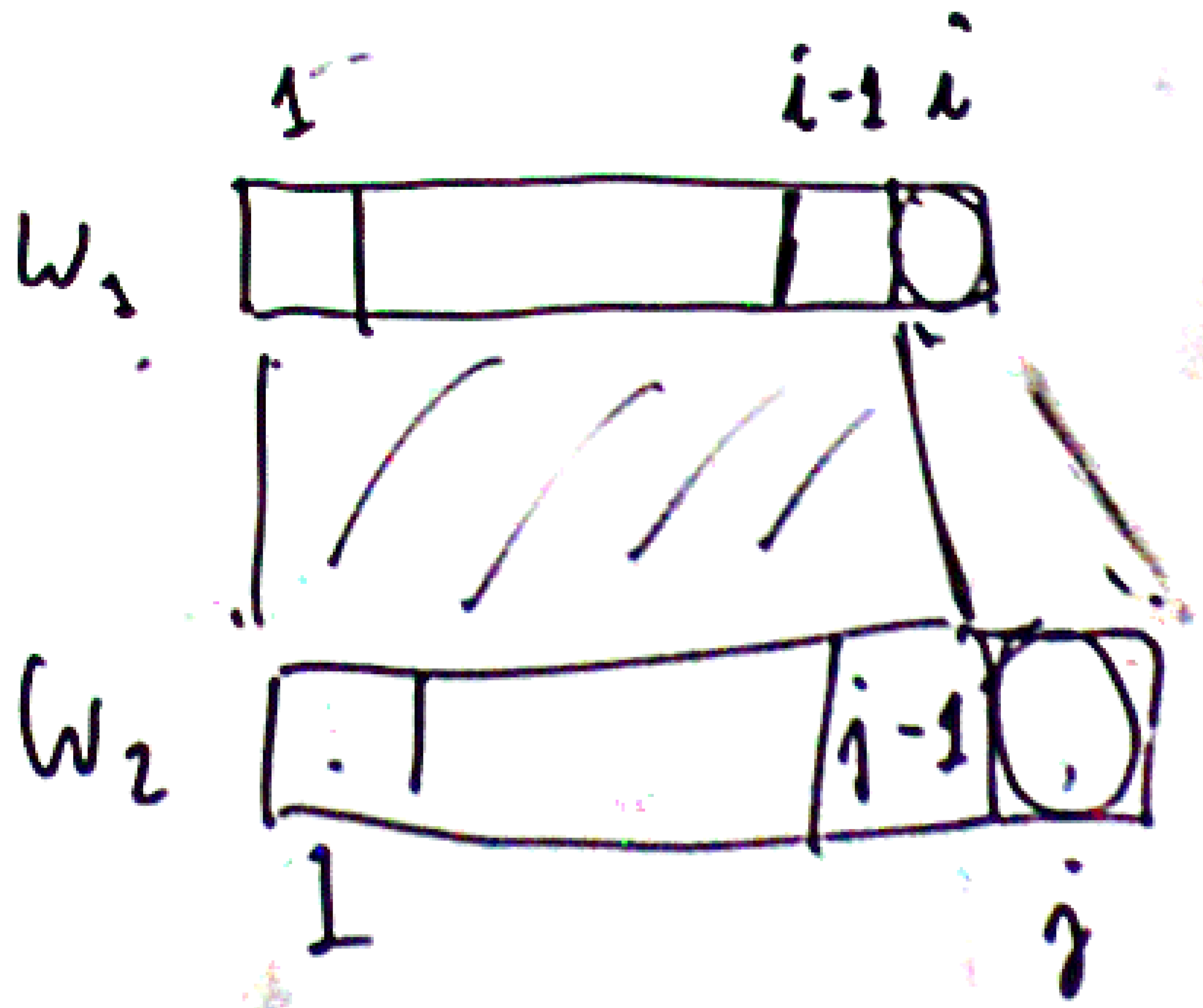
$ed(i,j) =$

$j \quad i=0$

$i \quad j=0$

$i>0$, $j>0$



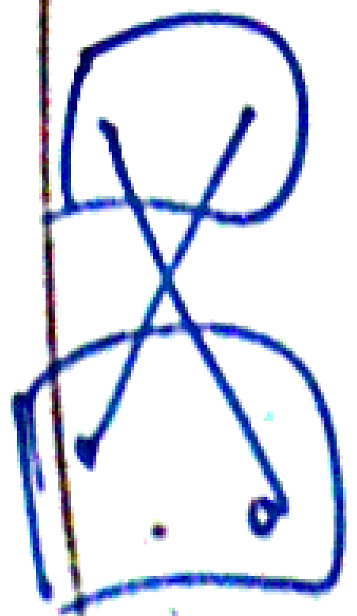


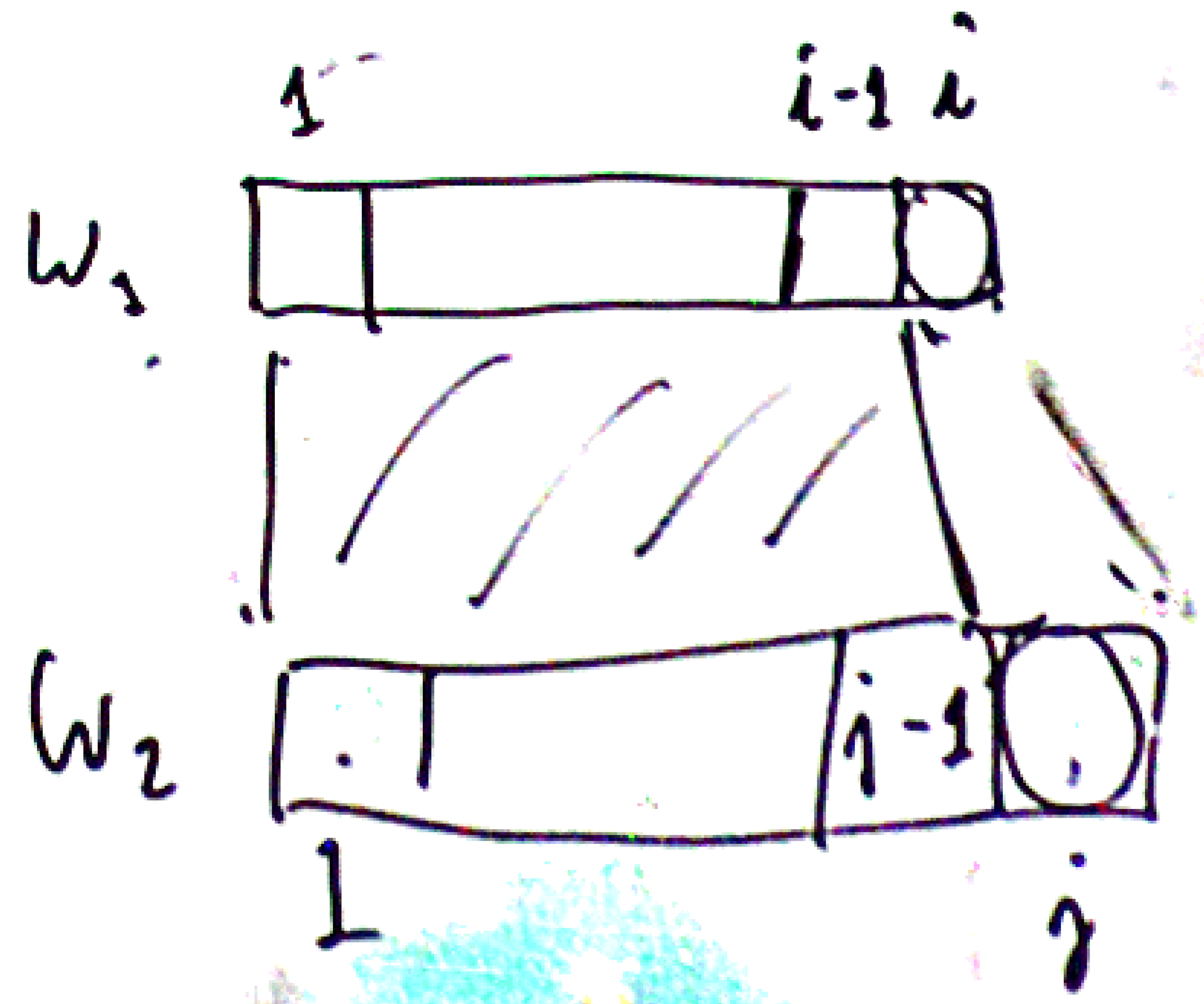
$ed(i-1,j)+1$

$ed(i,j-1)+1$

$ed(i-1,j-1)+$

$$ed(i,j) = \begin{cases} j & i = 0 \\ i & j = 0 \\ & i > 0,\ j > 0 \end{cases}$$



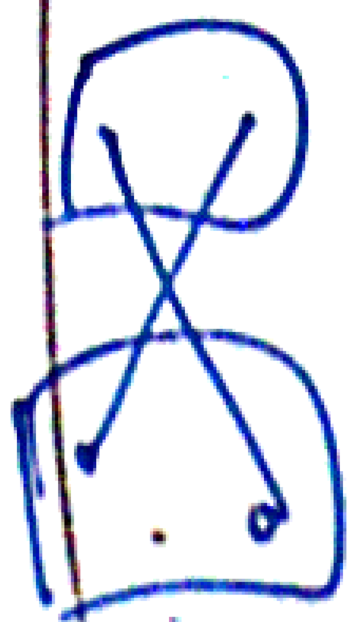


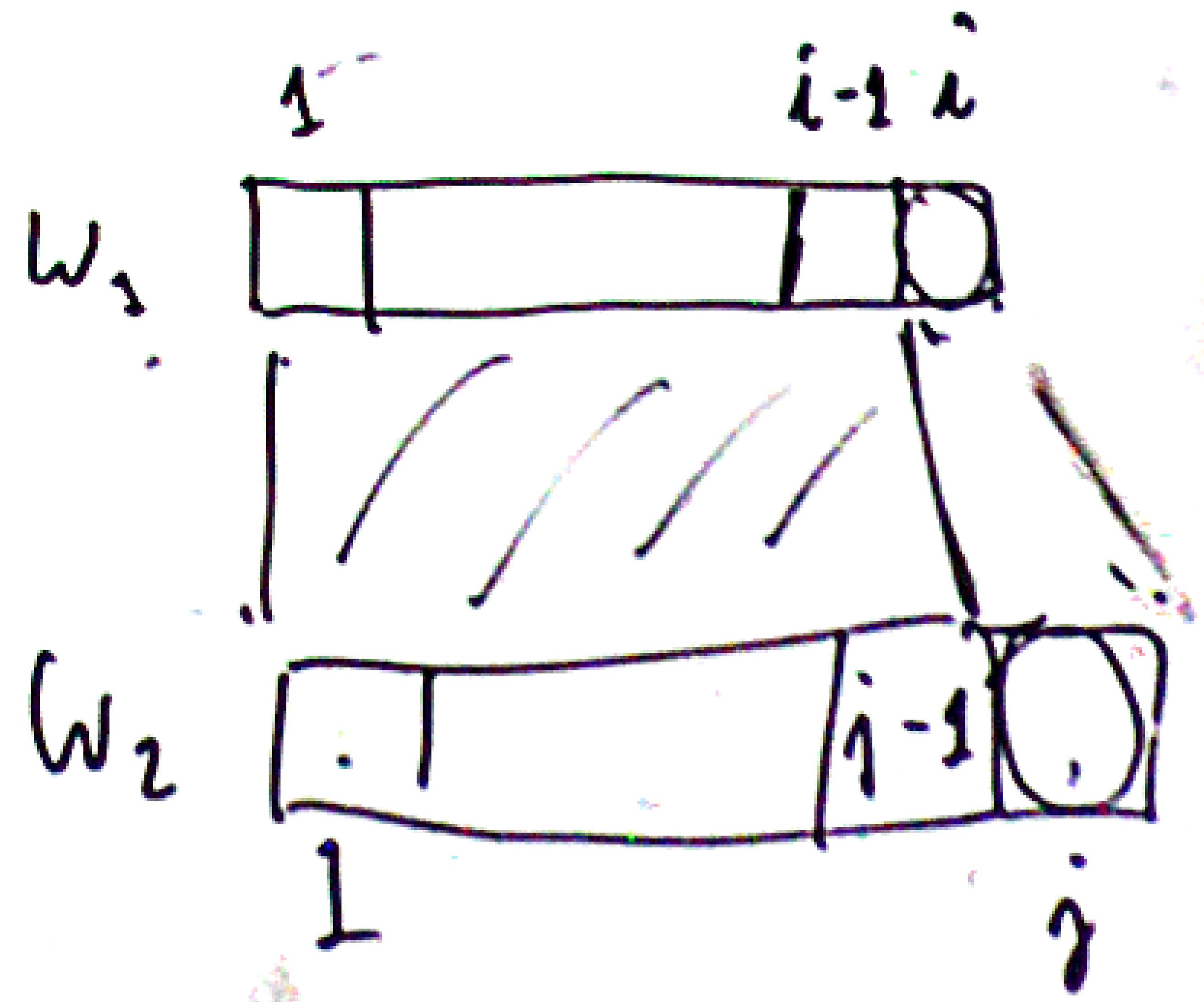
$ed(\ \ \ \ ) + 1$

$ed(i,$

$ed(i-1, j-1) +$

$$ed(i,j) = \begin{cases} j & i=0 \\ i & j=0 \\ & i>0,\ j>0 \end{cases}$$





$ed(i-1,j)+1$

$ed(i,j-1)+1$

$ed(i-1,j-1)+$