# Can we connect existing *real* images and labels to GAN representations?



**???**

Latent space

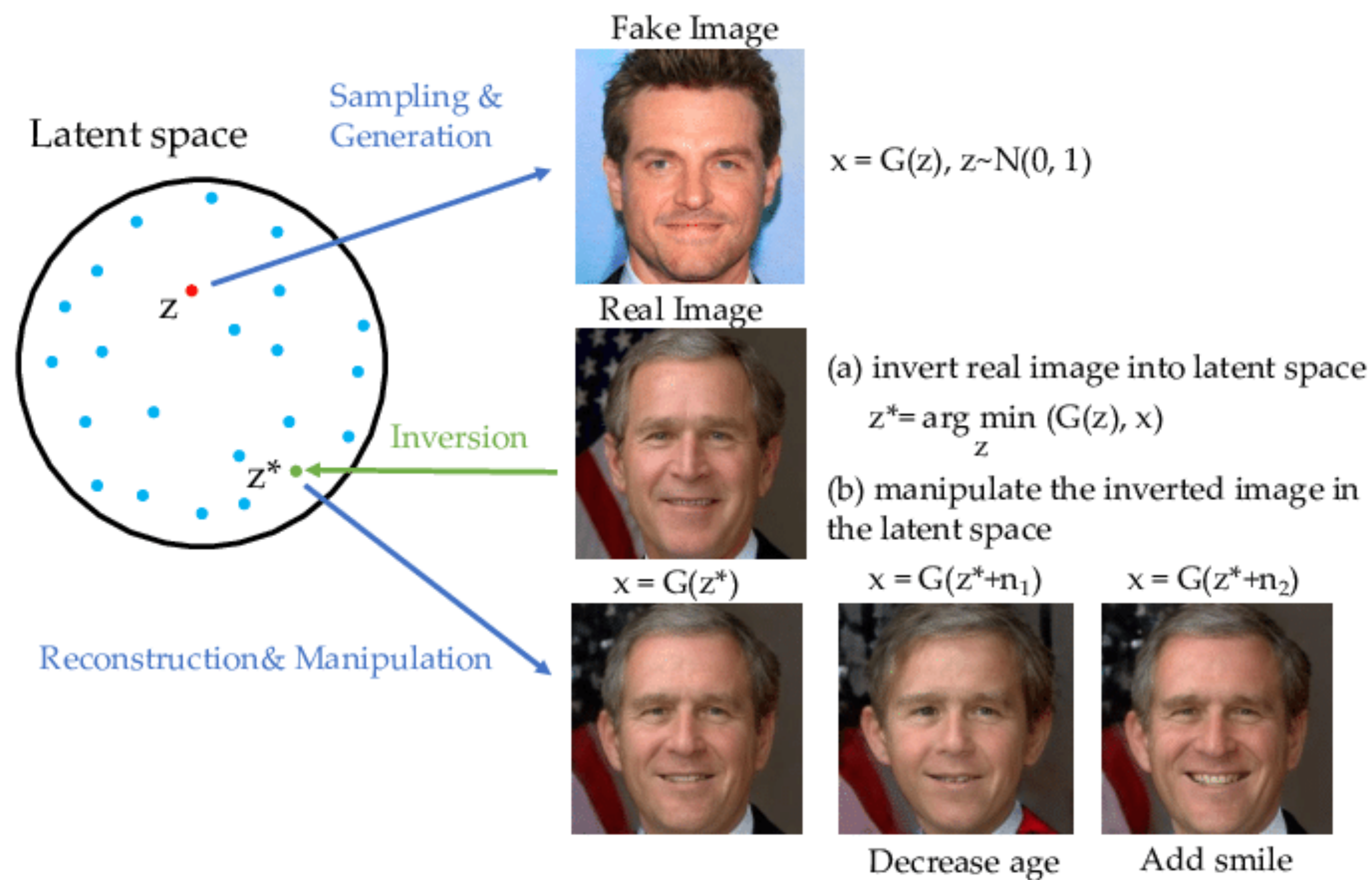$w$

Label Generator

$\rightarrow \hat{Y}$

Supervise loss

$Y$

Real image

Real existing label

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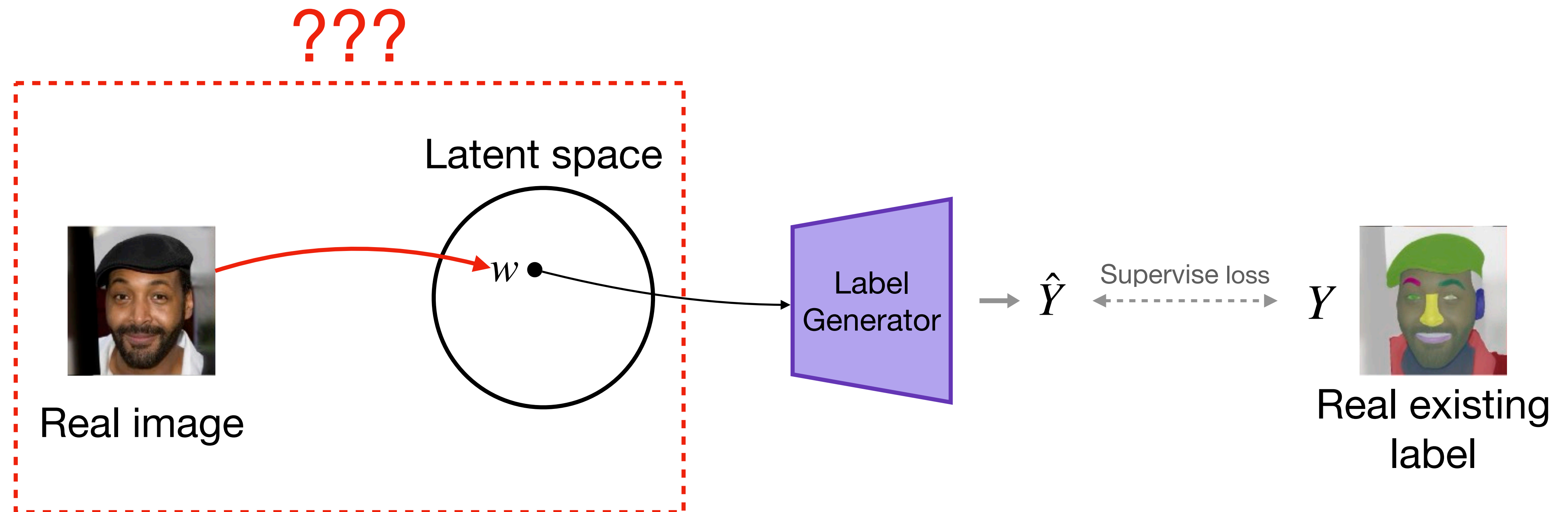
# Image editing with GANs



Figure from [22]

Latent space

Sampling & Generation

$x = G(z)$, $z \sim N(0, 1)$

Fake Image

Real Image

Inversion

(a) invert real image into latent space

$z^* = \arg\min_z (G(z), x)$

(b) manipulate the inverted image in the latent space

Reconstruction & Manipulation

$x = G(z^*)$     $x = G(z^* + n_1)$     $x = G(z^* + n_2)$

Decrease age     Add smile

[22] Xia *et al.* (2022)