The analysis electric fields in the entire space of two parallel conductors carrying different magnitude charge densities that I propose in the lecture is wrong because I did note consider induction. Since charges can move in the conductor. The correct analysis is:

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Here the conductors separated by very large distance

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The conductors are at close distance

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G1

G3

G4

EI

EII

EIII

G2

The values of the densities are function of the conductor’s separation.

From Gaussian surface G4 at the Gaussian surface

From Gaussian surface G1

From Gaussian surface G2

From Gaussian surface G3

In addition, from conservation of charges:

And

Visit me at my office hours if you need to know the details of the analysis.