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**From:** Joscha Bach [REDACTED]  
**Sent:** Wednesday, October 23, 2013 2:41 PM  
**To:** Jeffrey Epstein  
**Cc:** Joi Ito; Kevin Slavin; Ari Gesher; takashi ikegami; Martin Nowak; Greg Borenstein  
**Subject:** Re: MDF

Am 22.10.2013 um 16:01 schrieb Jeffrey Epstein <jeevacation@gmail.com>:

> I would add the possibility that each differentiated input has its own =ncrypted algorithm. and looking at it from too high an altitude =rovides little info about each one..i.e. optic nerve encrption =ifferent than nasal receptors . maybe even a one time code . that =llows only the individual to access certain stored info.

Indeed! Each individual will form its own code, for each modality. On =he other hand, these codes do not simply diverge, but they are the =result of the individual's adaptation to its own (changing, =veloping, deteriorating) physiology. The nervous system is designed to =xtract structure based on the statistical properties of the input, and =o compensate for defects. For instance, replacing the fine-grained =nput provided by the many receptors of the cochlea with a crude implant =today's models sample only a handful of frequencies) will usually =result in a subjective experience of continuous auditory perception; =pling the data of a few pixels into the optic nerve of a blind person =ay allocate those pixels their correct positions within the visual =ield. An interesting question: what are the limits of the plasticity of =he sensory modalities? For instance, could we switch modalities to some =xtent?

More than hundred years ago, Stratton did a famous experiment, where he =ore glasses that turned the world upside down (using prisms). After a =ew days, his brain adapted and he would perceive everything as being =right again. An experiment that I would like to see one day (and of which I am not =ware if someone already tried it): equip a subject with an augmented =ality display, for instance Google Glass, and continuously feed a =visual depiction of auditory input into a corner of the display. The =nput should transform the result of a filtered Fourier analysis of the =ounds around the subject into regular colors and patterns that can =asily be discerned visually. At the same time, plug the ears of the =subject (for instance, with noise canceling earplugs and white noise). =ith a little training, subjects should be able to read typical patterns =for instance, many phonemes) consciously from their sound overlay. But =fter a few weeks: Could a portion of the visual cortex adapt to the =statistical properties of the sound overlay so completely that the =subject could literally perceive sounds via their eyes? Could we see =usic? Could we make use of induced synesthesia to partially replace a =ost modality?

Cheers,

```
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