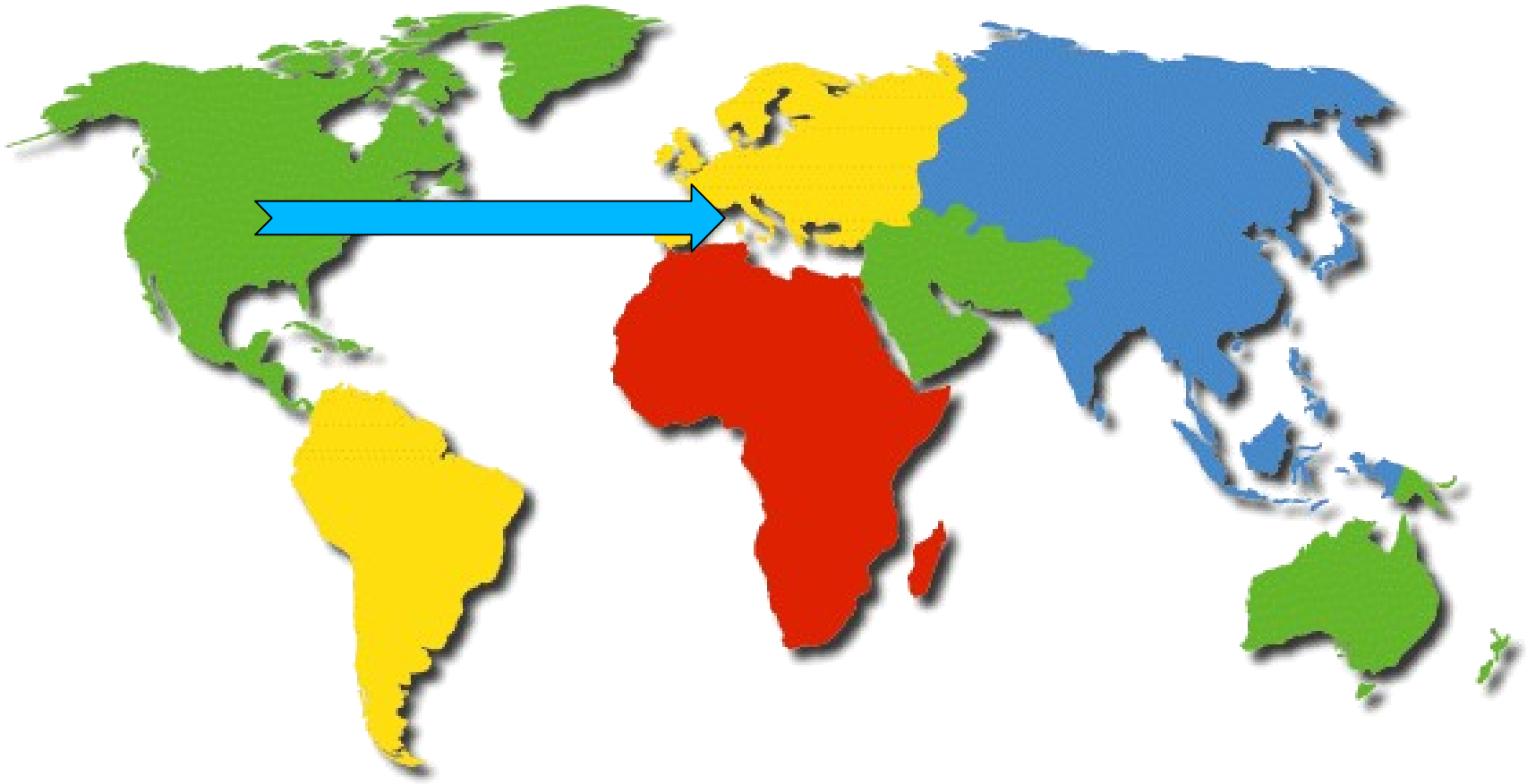
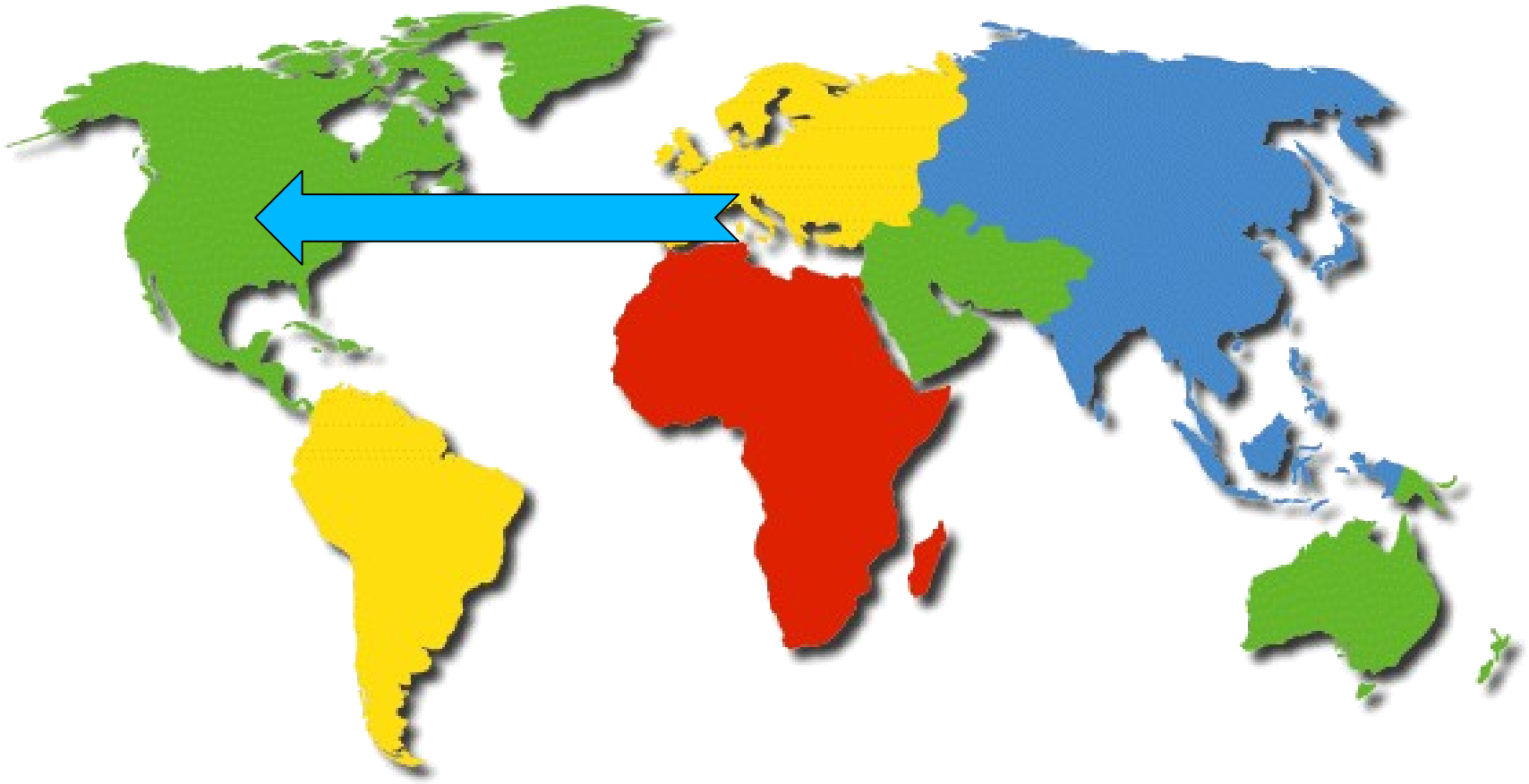
Cryptographic Ash Functions

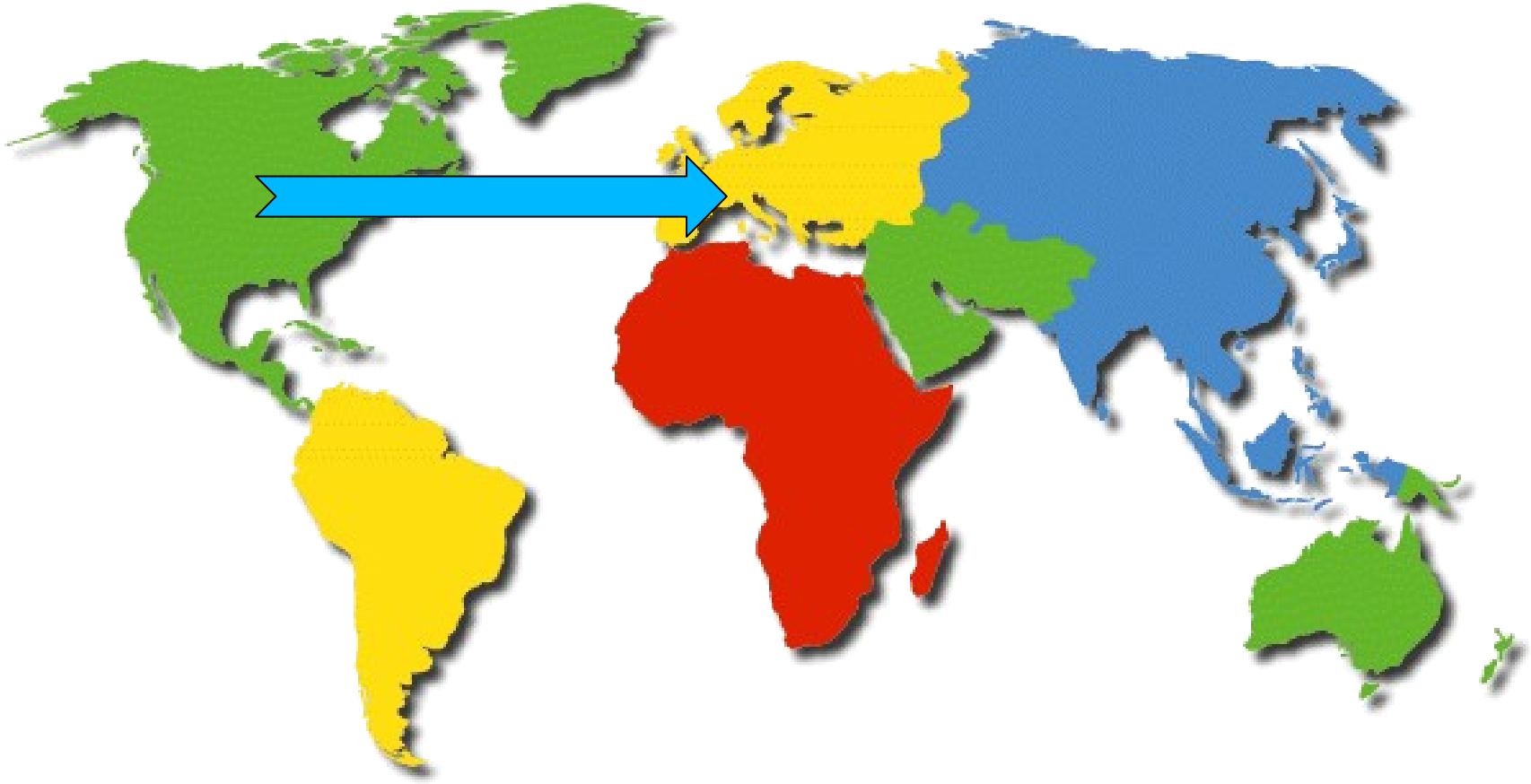
Bijective Functions



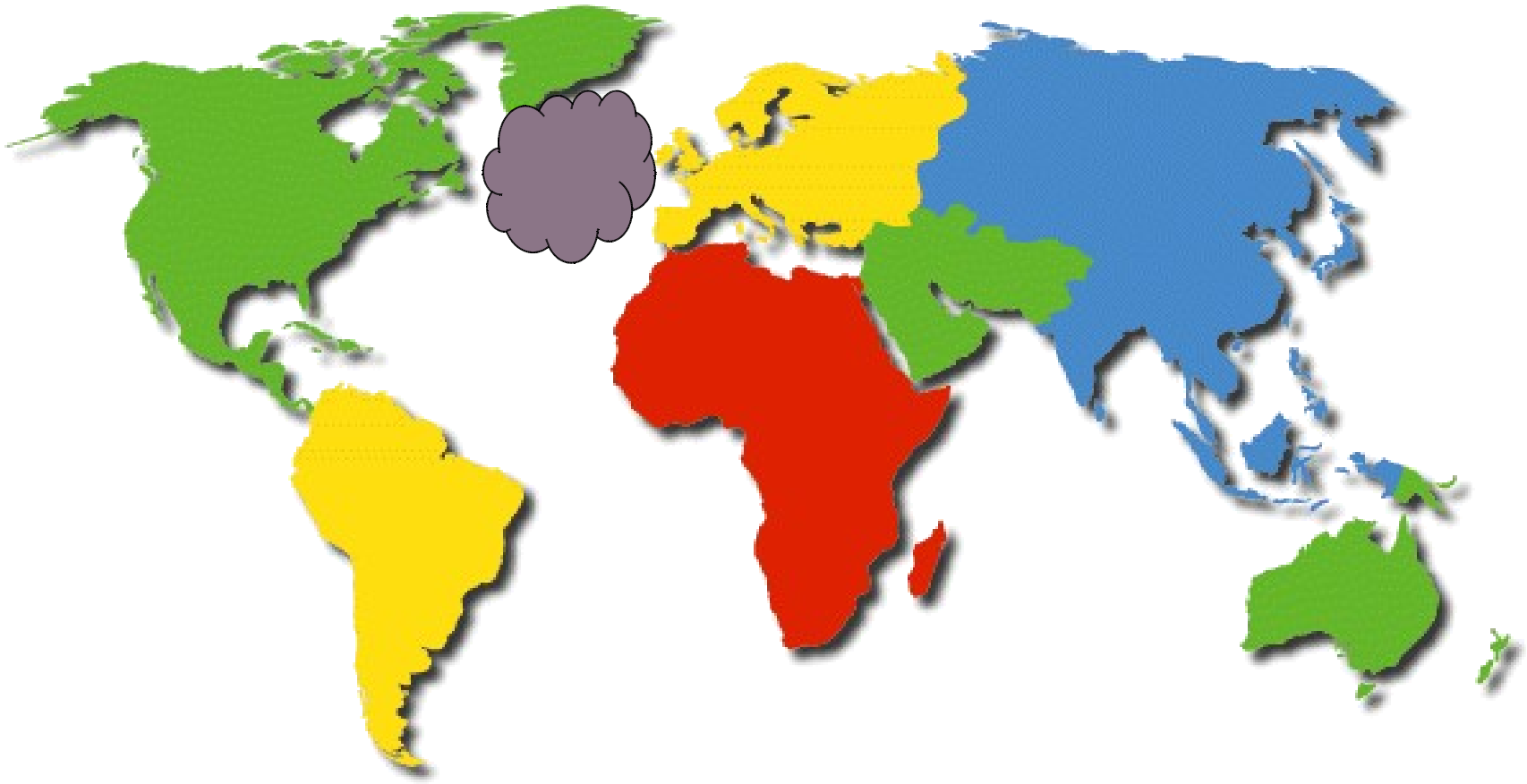
Bijective Functions



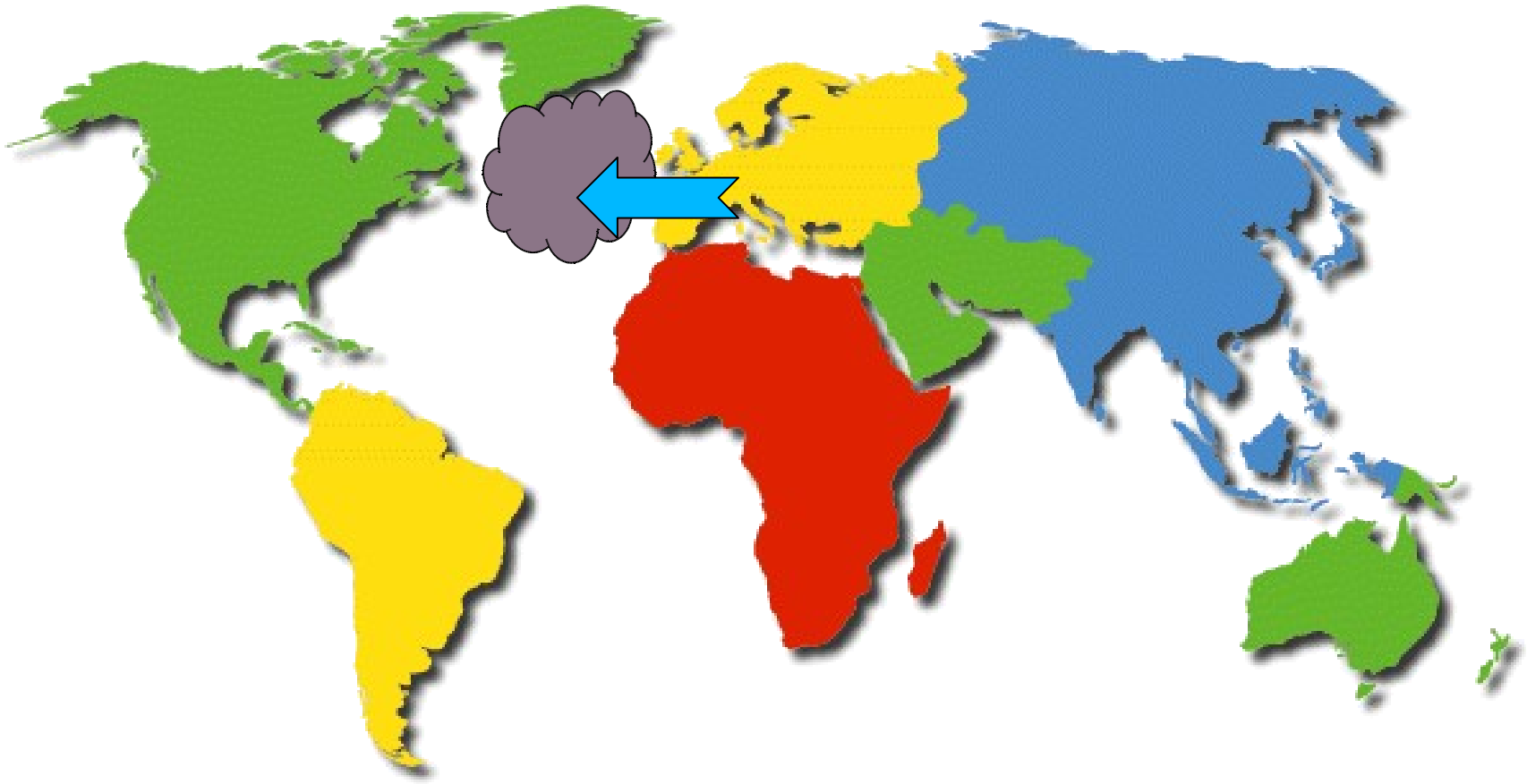
One-Way Ash Function



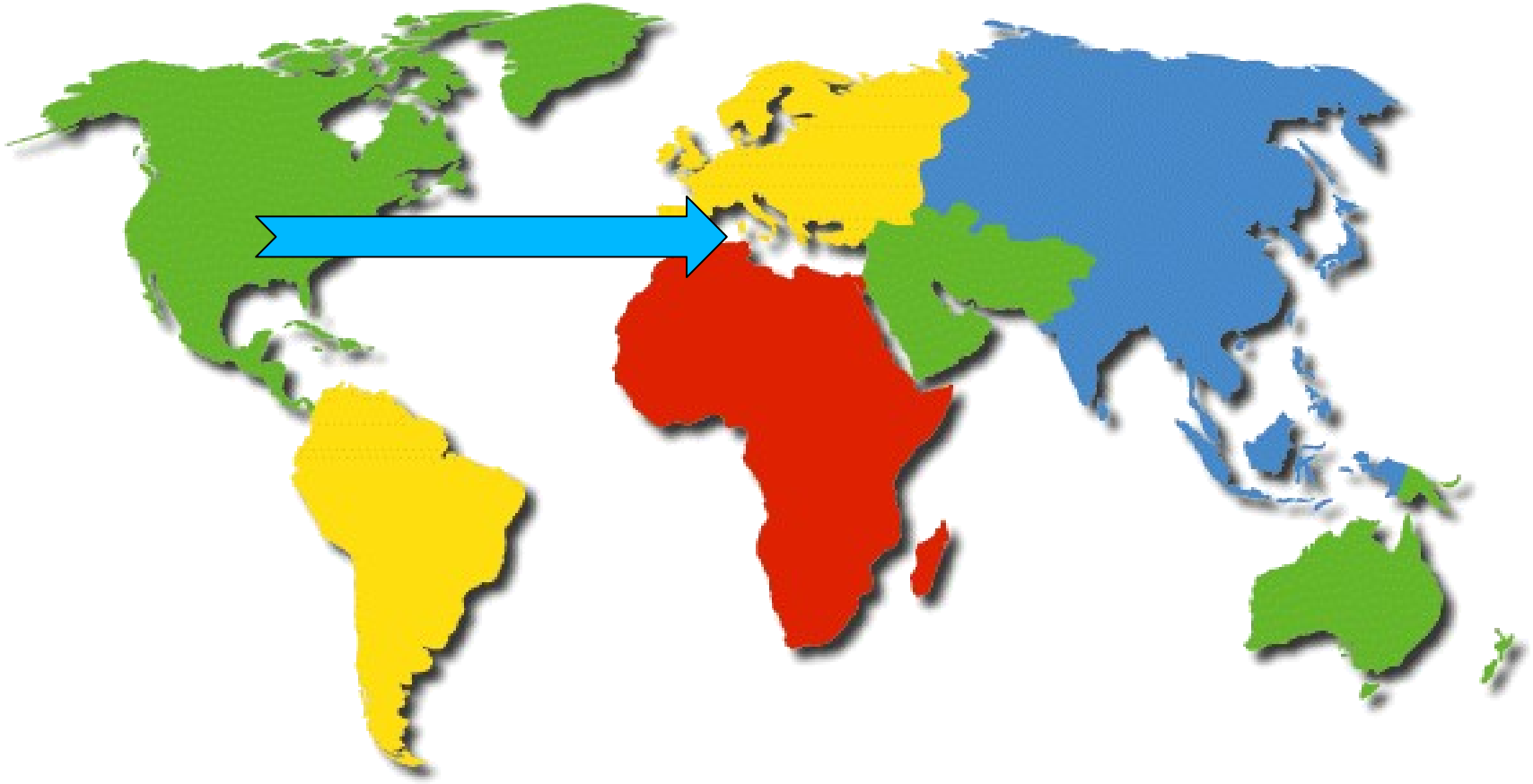
One-Way Ash Function



One-Way Ash Function



The Function is Lossy
Sometimes you can compute preimages
Sometimes you cant



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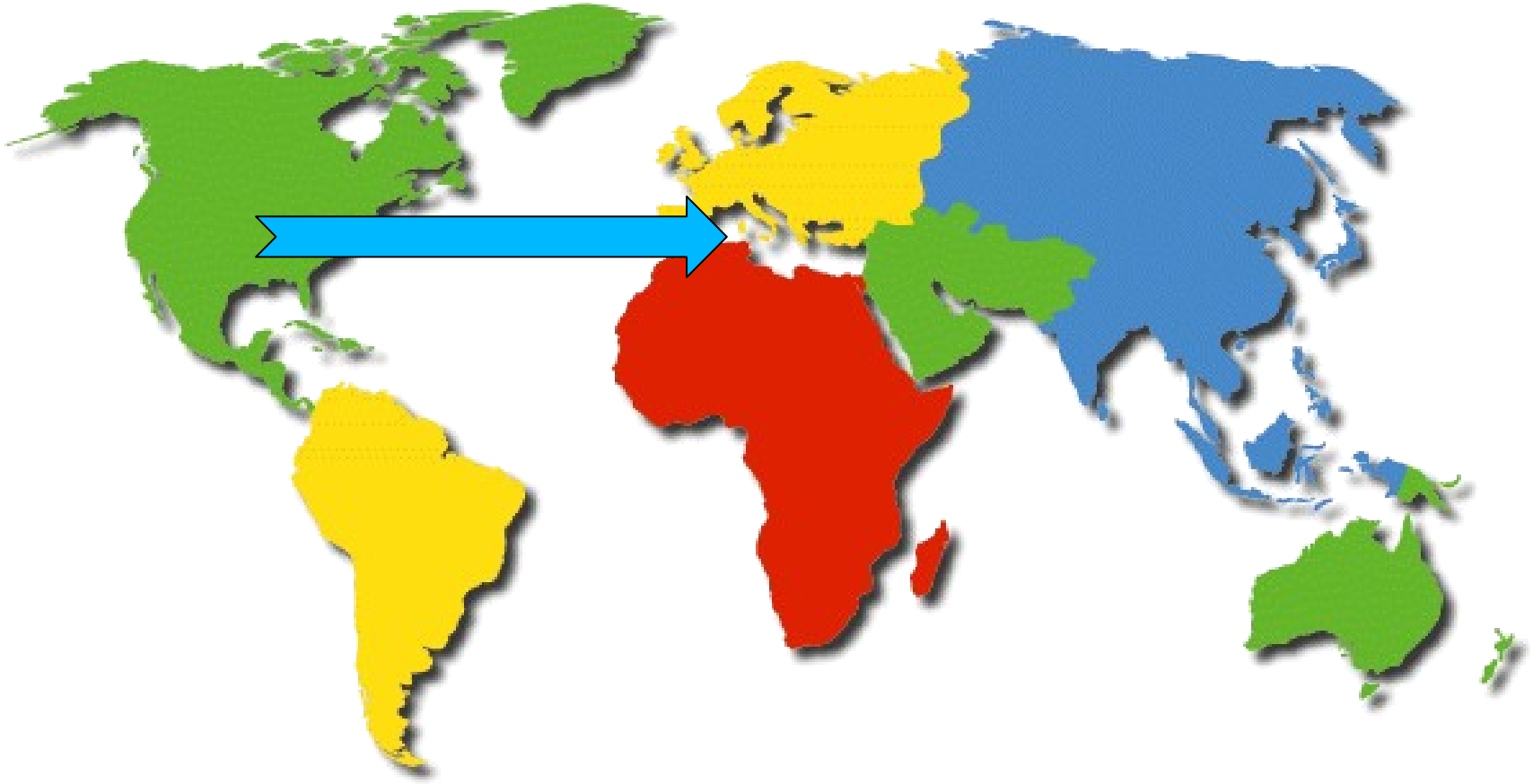

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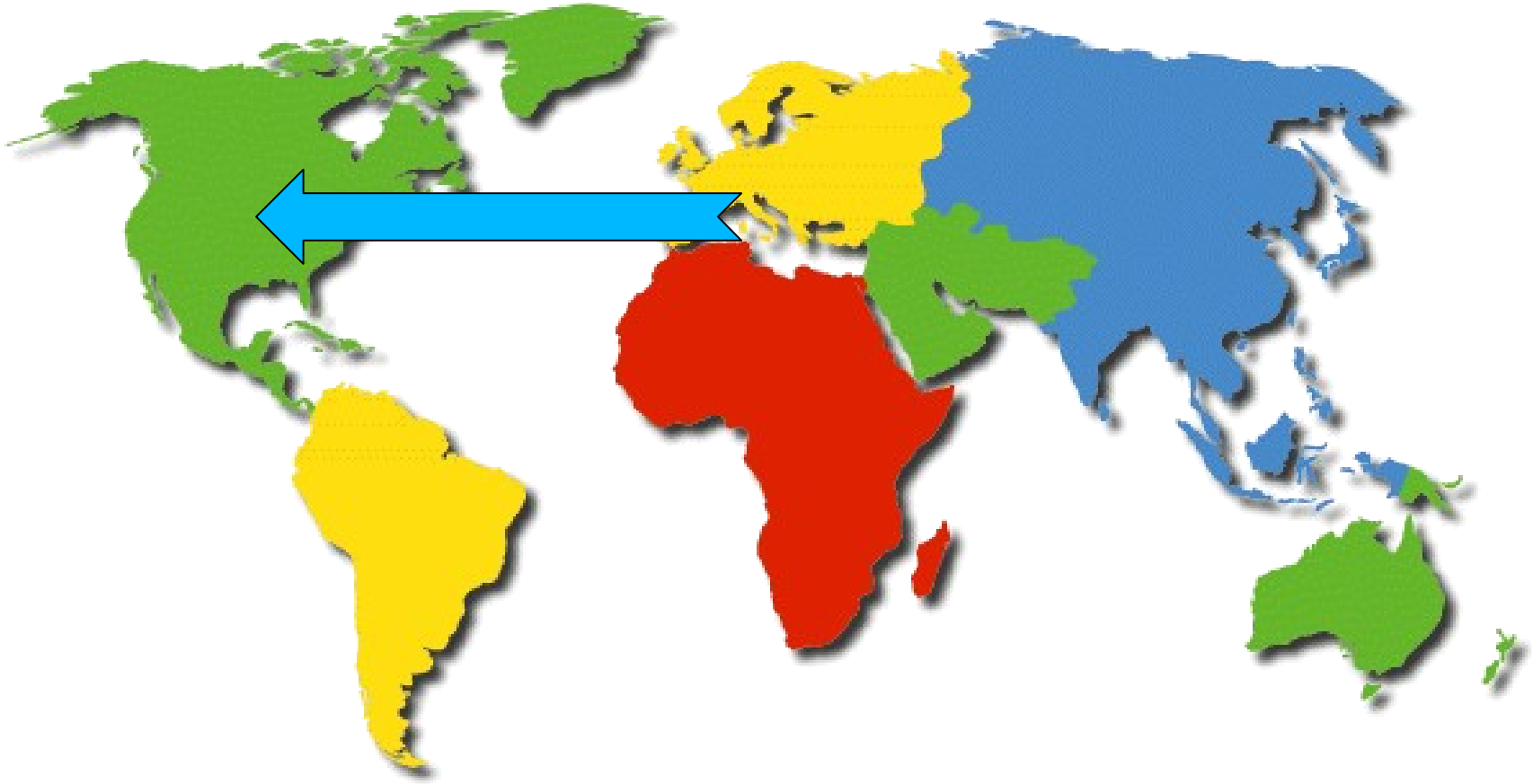

Random Walks

- It is known that one way to break an ash function is to apply random walks.
- In April many people trying to “invert” the Ash function had to engage in random walk

Previous Work in This Area

- **Isogeny Volcanoes** introduced by D. Kohel in his thesis: Berkeley 1996.

Follow up work

- **Isogeny Volcanoes and the SEA Algorithm**
  - M. Fouquet and F. Morain: ANTS-5
- **Modular Polynomials via Isogeny Volcanoes**
  - R. Broker, K. Lauter and AV. Sutherland: 2010
- **Pairing the Volcano**
  - Ionica and Joux: ANTS 2010

EuroCrapt

Journal of Craptology : Volume 7 is now out

Volume 7 was a special Valentine's edition

J. Crap aims to publish the leading crapto research

www.anagram.com/~jcrap/

Submit via an email to one of the editors:

Nigel Smart

Tom Berson

Raphael C.-W. Phan

Orr Dunkelman

Dan Page

PhD and Post Doc Position

- In area of provable security and group signatures in particular.

- PhD (EU Nationals Only)
  - Closing Date: 6th June

- RA (Anyone with PhD in Crypto)
  - Closing Date: 30th June

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