



Global Focus on Knowledge
“Eruption of Problems Seen in Africa” 3
Considerations From Virtual Nations



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Targeted Problem

 The frequency of conflicts over Africa, the loss of national identities in many nations

 However, Africa is huge...

- Some nations enjoy peace, others suffer from war
- Nations that split in two, nations where government perished

 Conflicts and Peace, various forms of integrity and division .

 What makes it so?

Approach 1

☞ Possible various hypotheses: poverty, misgovernment, complicated population component, decrease of support from outside...


☞ How can it be verified?

☞ The best, smartest way is an experiment .

☞ However, it is impossible to carry out experiments with actual nations or societies

Approach 2

 An approach employing “virtual nations”

 In cyber space, “pseudo-Somalia” or “pseudo-Sudan” are created, and they are experimented with

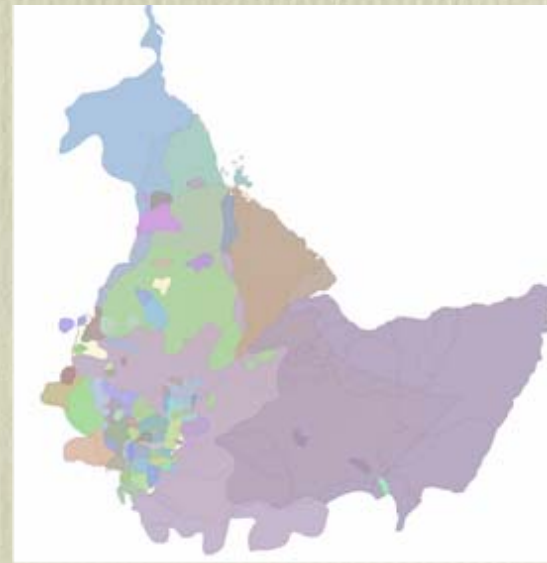
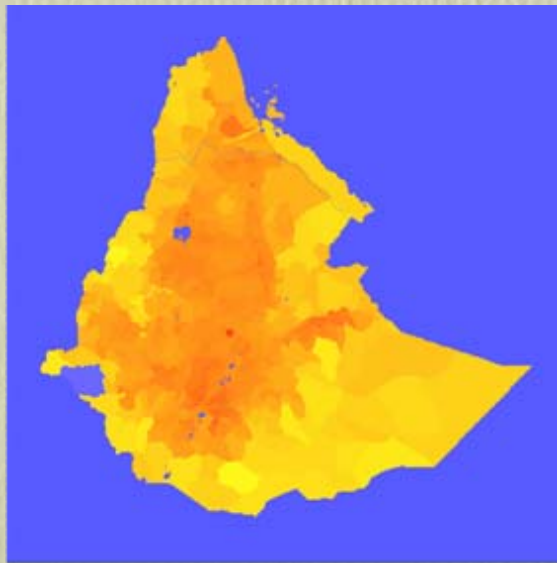
 MAS and GIS as tools

- MAS (multi-agent simulation): techniques of “artificial society” construction (refer to “Yamakage 2007”)
- GIS (Geographical Information System): techniques of digital process about space data (refer to “Okabe 2001”)

How to Create Virtual Nations

1

First step: Collect basic GIS data of actual nations such as population distribution/ ethnic distribution/ religious distribution and others

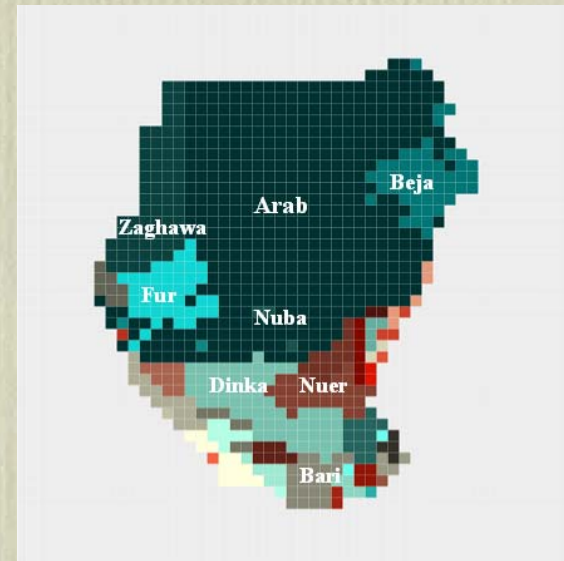
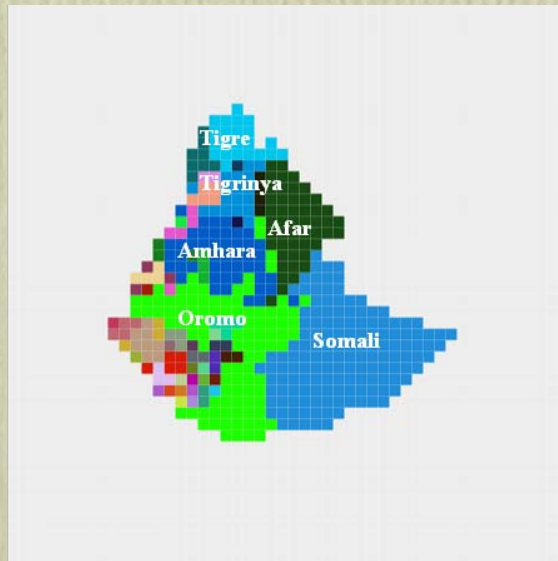


**Population distribution (left) and Ethnic distribution (right) of Ethiopia/ Ertra
(created from [CIESIN et al., 2004; Asher and Moseley 1993] and others)**

How to Create Virtual Nations

2

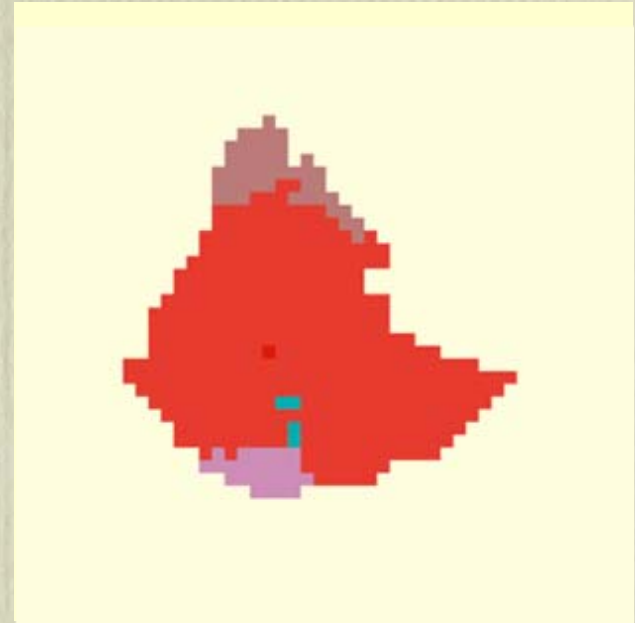
To run those dates into virtual areas partitioned in a mesh way :
Virtual nations with diversified and various inhabitants will be completed



Ethnic distribution of virtual Ethiopia Ertra (left) and virtual Sudan (right)

Situation of Virtual Nations

- At first, a government rules the whole country
- Various anti-government forces try to influence the whole
- Each power gather resources from residents and outsiders, and tries to occupy national lands by arraying them under their domination
- Each power has its characteristics such as “pro-Arab”, and “pro-Christian” etc .

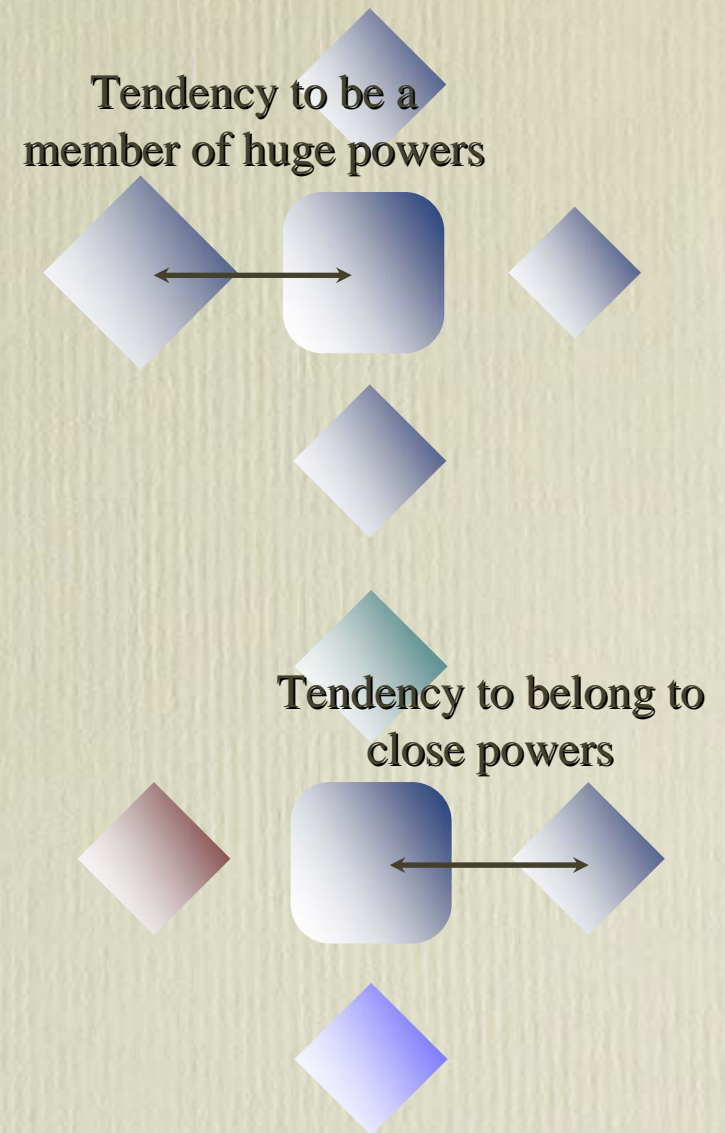


National unification and split is caused by conflicts between powers



How Virtual Nations Move

- Every cell on domain moves from/ to powers established around them
- At that time, two rules are applied:
 - Any “Strong” power that can employ more resources tends to rule its cell (military coercion)
 - A cell tends to belong to powers that have affinities for residential attributes such as: ethnicity, religion, etc. political support



Virtual Nations

1

Application to Eastern North African Nations



- What will a mixture of interaction by virtual nations bring to targeted nation's unification ?
- Apply to eastern North African nations that have had various forms of unification and split .

from CIA, *The World Factbook* (on line)

(<http://www.CIA.gov/library/publications/the-world-factbook/docs/refmaps.html>)

Virtual Nations

2 A Nation Called Sudan



- Huge land and variety of citizens
- The successive regimes have been inclined to Arab-Muslim citizens
- Since independence in 1956, civil war occurred in sothern areas during almost all periods .
- After 2003, conflicts have deteriorated in the western Darfur region

from CIA, *The World Factbook* (on line)

(<http://www.CIA.gov/library/publications/the-world-factbook/docs/refmaps.html>)

Virtual Nations

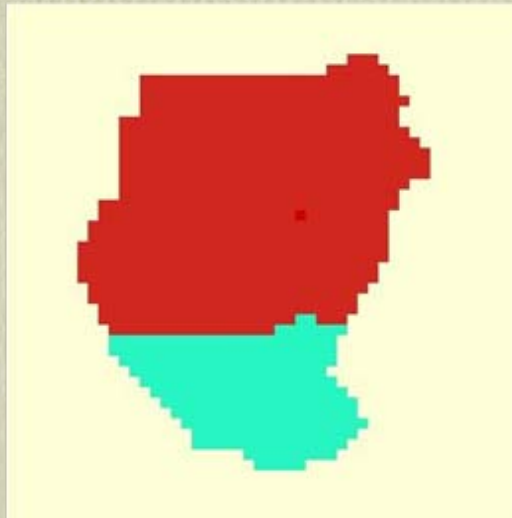
3

Trial on Virtual Sudan

When we move the “pseudo-Sudan” as a virtual nation ...



The first Civil
War Type



The second
Civil War Type



Darfur Conflict

some characteristic patterns of disruption
observed in reality appeared

Virtual Nations

4

Application to Somalia



When we create “pseudo- Somalia (Barre Office)”
as a virtual nation we get...



From CIA, *The World Factbook* (on line)

(<http://www.CIA.gov/library/publications/the-world-factbook/docs/refmaps.html>)

a re-creation of the disappearance of the government
and of the striking disruptions after the 1990s period of territorial rule

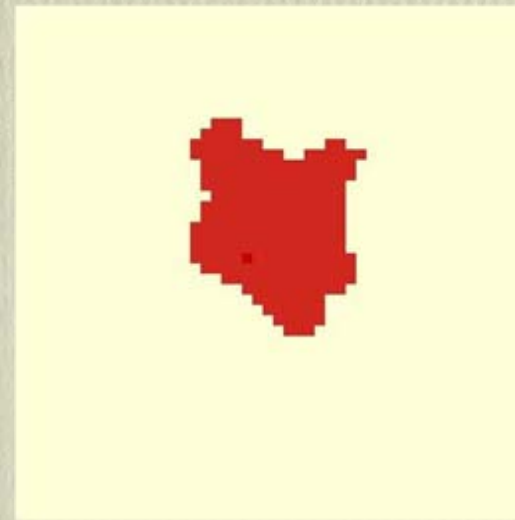
Virtual Nations

5

Application to Kenya



Is it inevitable for virtual nations to have disruption and conflict?



From CIA, *The World Factbook* (on line)

(<http://www.CIA.gov/library/publications/the-world-factbook/docs/refmaps.html>)

“Pseudo-Kenya” as a virtual nation could keep unifying

Points

- ☞ In Virtual Nations, re-create various forms of unification and division observed in eastern North African nations .
- ☞ Many parameters of virtual nation are held in common, some limited date-matching is different .
- ☞ By analyzing these differences, forks between unification and division observed in actual nations become apparent .

Provisional Analysis

- What differences within virtual nations become effective .

☞ Restriction of human/material resources (population distribution and GDP)

☞ Somalia and Sudan etc. : Nations which have problems such as expansion of territory and scarcity of resources, would face relative difficulties of unification

☞ Influences of ethnic/religious distribution and characteristics of governments

☞ Every nation shares civilian diversity and government's bias.

☞ Those spacious conditions (concentration/ variance of the attributes, extension of governmental foundation) determine concrete forms of unification and disruption .

Conclusions

- Various experimentations are possible, and they can be extended
- Virtual Experimentation under a condition of different government from the real one
- Resources support to governments and anti-governments: verification of influences of outsider's participation
- Verification of influences of population increase and GDP's fluctuations
- Introduction of maneuvers between powers (planned)
- Introduction of GIS data such as material resources' distribution etc.

Citations

- Asher, Ron. E. and Christopher Moseley. eds. 1993. *Atlas of the World's Languages*, Oxford: Routledge.
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- Atsuyuki Okabe, 2001, *Challenges of Space-Information Science*, Iwanami Shoten .
- Susumu Yamakage, 2007, *How to make Artificial Society*, Syoseki Koubou Hayayama .