# The Science of Sustaining Peace

## Actionable Lessons from The Columbia University Human Peace Project

Peter T. Coleman

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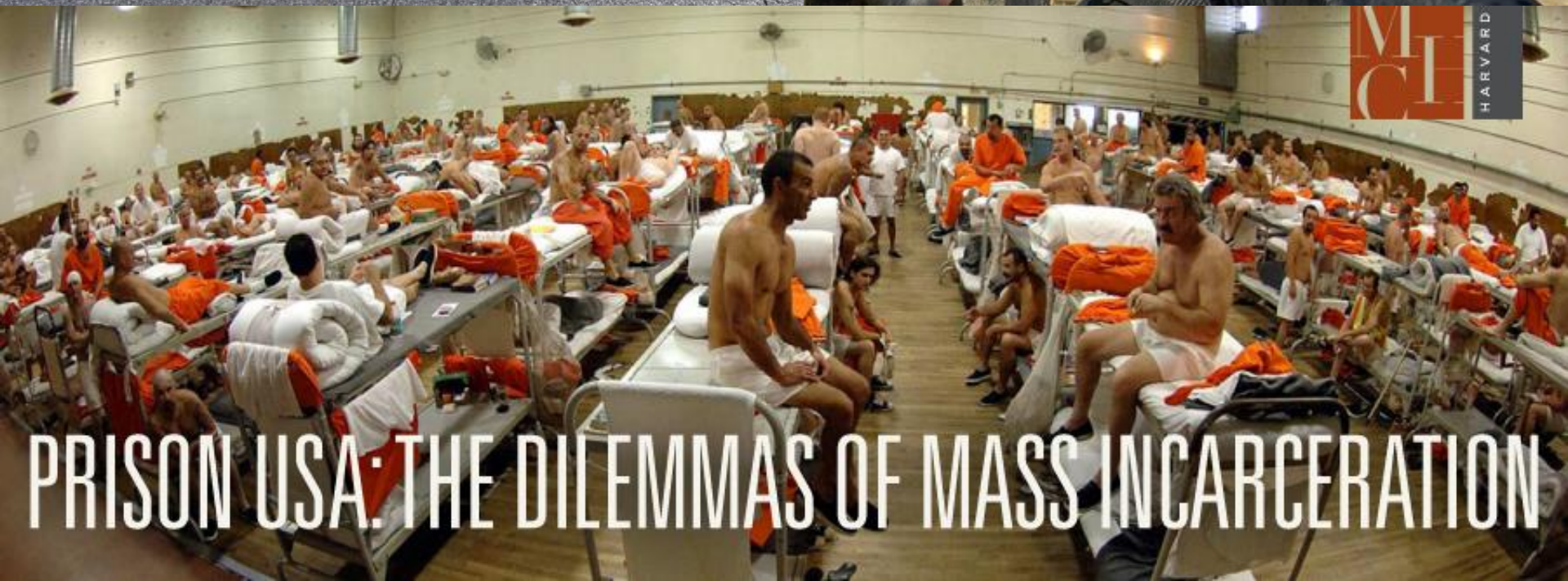
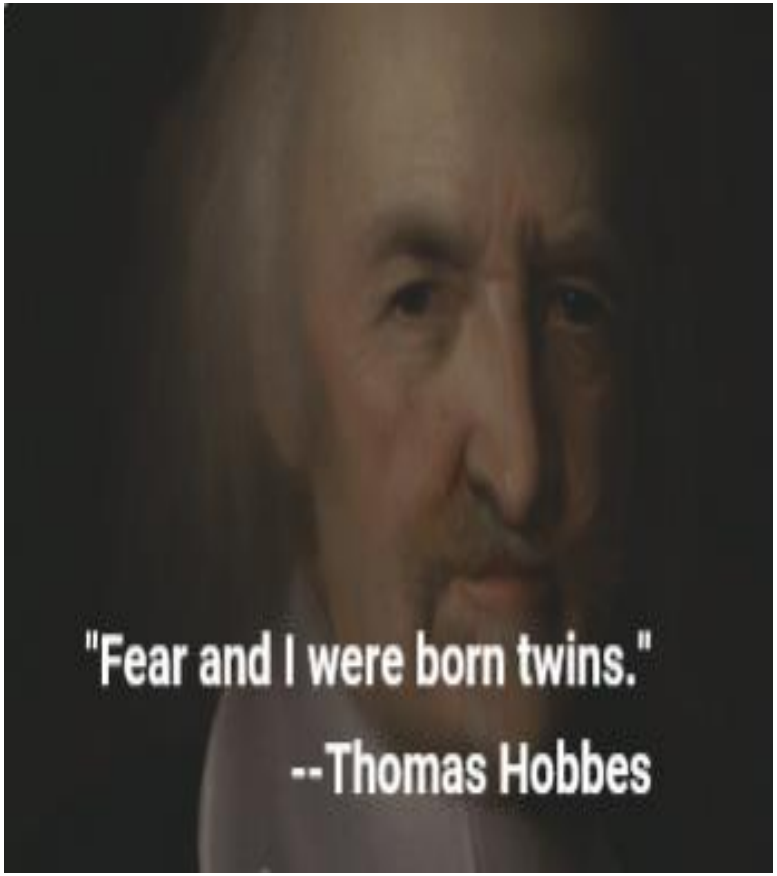


# PRISON USA: THE DILEMMAS OF MASS INCARCERATION

HARVARD

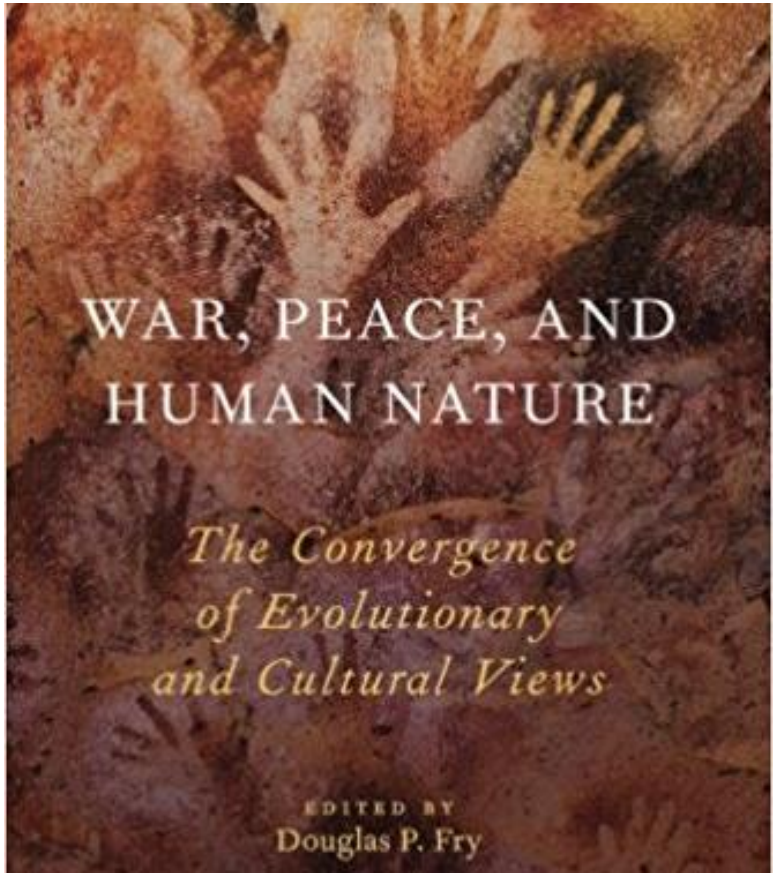
- Many believe this is the way things have always been – a belief based on the views proffered by the likes of Thomas Hobbes in the 1600s and by many politicians today that **humans are inherently selfish, violent and warlike and so must be contained by force**.



+

- But ample evidence from the study of humans from archeology, anthropology, history and political science, tells us that **for the vast majority of our time on this planet (about 2 million years), we lived in peace** (Fry, 2015).

- In fact **war and intergroup violence is a relatively new** invention –first surfacing around 10 thousand years ago (Haas, 1996).



# The State of the Planet

- **The good news** is that despite the current legitimatization of violence and war, **long-term trends seem to indicate that humans have gotten progressively less violent** over the past few centuries (Human Security Report, 2012; Goldstein, 2011; Pinker, 2011) and **better at making peace** (Mason, 2007; Ricigliano, 2012; UNSG, 2004).

# The State of the Planet

- **The bad news** is that today more countries are experiencing violent conflict than in the last 30 years (UNSG Report, 2018).
- The numbers of refugees, internally displaced people and global military spending are at historic highs (Carl, 2018).
- Wars in the last century directly claimed 40 million lives, with countless others perishing from the consequences of those conflicts (Sarkeeys & Wayman, 2010).
- 25% of peace agreements relapse into violence within 5 years, and these failures increase the likelihood of these conflicts becoming evermore violent and intractable (Ricigliano, 2012).

# A Call to Sustaining Peace

## AGE Report (2015), UN Res 70/262 & 2282, SDG16 (2016)

- "If there is a principal *raison d'être* for the creation of the United Nations, it is to sustain international peace in all its dimensions."
- Continuation of Boutros Boutros-Ghali's 1992 *Agenda for Peace*.
- **2015 AGE Report**: "For many UN Member States and UN Organization entities alike, peacebuilding is left as an afterthought: under-prioritized, under-resourced, and undertaken only after the guns fall silent."
- "A change in mind-set is needed: rather than waiting until crisis breaks out and then making a default recourse to a crisis response, timely efforts to prevent conflict and then sustain peace need to be embedded across all sectors and phases of action. "

# The Human Peace Project

- In response, our team launched the **Human Peace Project**: A ridiculously ambitious and grandiose attempt at employing models and methods from complexity science to conceptualize *the complex temporal dynamics of sustainably peaceful societies*.

# The Human Peace Project

- Research has shown that a central characteristic of peaceful societies is that they have **a clear vision for how to live peacefully**. They all developed an image and a mindset and the language, norms, taboos and institutions necessary to sustain peace (Fry, 2006).

# Agenda

- Three challenges to sustaining peace
- The Human Peace Project model and components
- Implications for Peace-Builders

# Three Challenges

- The Fear Problem

# Sustaining Which Peace?


| Severe | Lesser | Negative Peace | Warm Peace | Security Community |
|---|---|---|---|---|
| **US-USSR** (1948-1989)<br>**India-Pakistan** (1947-present)<br>**France-Germany** (19th & 20th Centuries) | **Bulgaria-Greece** (1908-1913)<br>**Colombia-Venezuela** (1841-1982)<br>**Russia-Ottoman Empire** (1849-1856) | **Egypt-Israel** (1989-present)<br>**UK-France** (1898-1945)<br>**Finland-USSR/Russia** (1944-present) | **Argentina-Brazil** (1986-present)<br>**Romania-EU** (1995-present)<br>**Malaysia-Indonesia** (1967-present) | **France-Germany** (1992-present)<br>**US-Canada** (1987-present)<br>**Denmark-Sweden** (1952-present) |

**Goertz, Diehl & Balas (2016). *The Puzzle of Peace: The Evolution of Peace in The International System*. Oxford**

# The Fear Problem

- **We don't understand how to *sustain positive peace*** because it's rarely studied (and hard to)
- **We don't promote PP sufficiently**
- **We don't measure PP adequately**
  - GPI (100%NP) and PPI (57%NP) measure mostly negative peace
  - SDG 16 indices the same (3:1 neg:pos ratio)
- **Nevertheless, we are learning what drives and sustains positive peace**.

# More Peaceful Societies Evidence…

- **A meaningful overarching identity** that unites groups across their differences;
- **Interconnections among subgroups** *(cross-cutting ties)* through trade, intermarriage, sports teams or professional associations;
- **Cooperative forms of interdependence** due to mutual ecological or economic dependencies or common security interests;
- **Socialization of non-warring values and taboos against violence** in homes, schools and communities (Costa Rica);

# More Peaceful Societies Evidence…

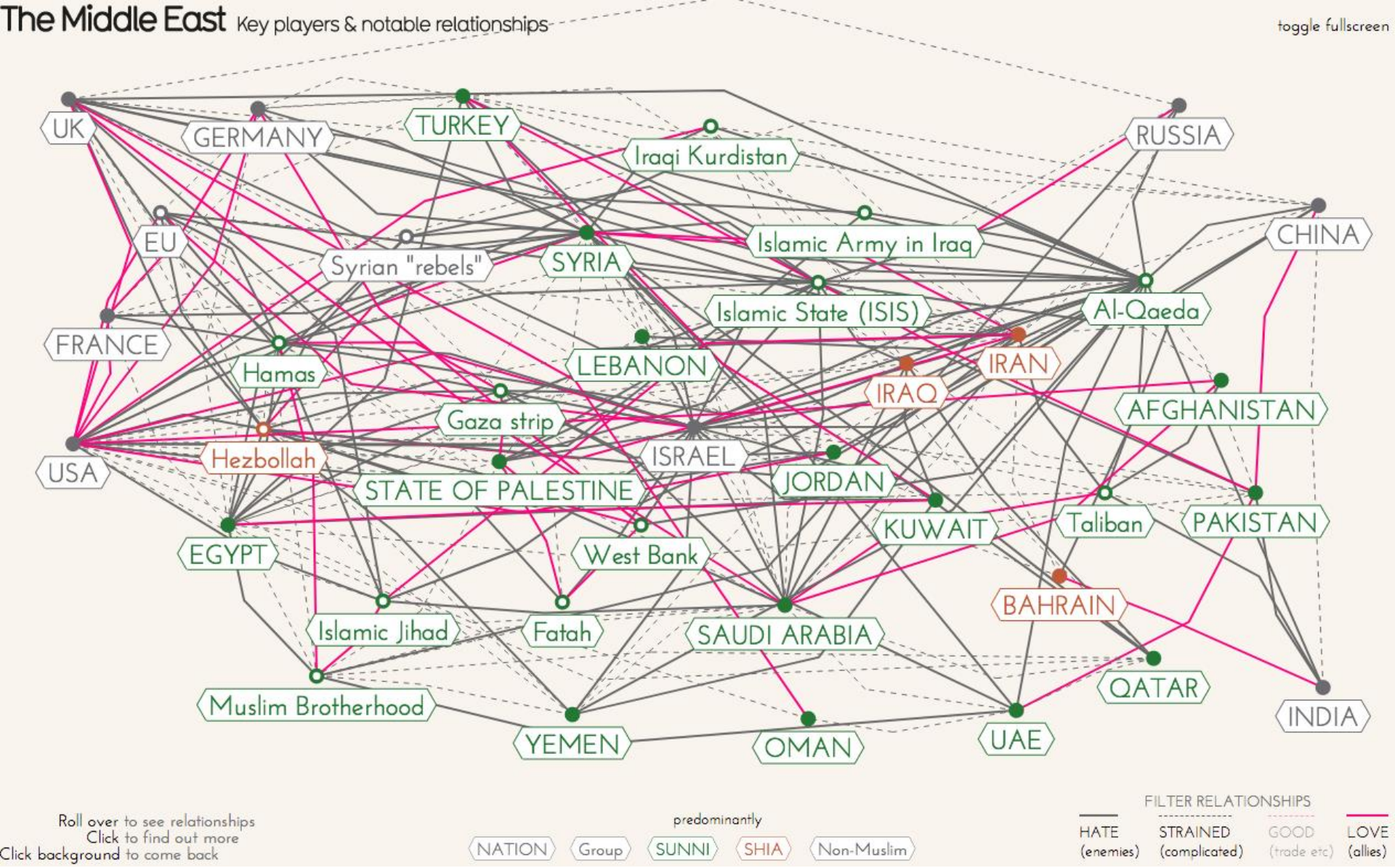
- **Symbolism and ceremonies** that reinforce and celebrate peace,
- **Gender equality and physical safety of women**, which are better predictors of state peacefulness than levels of democracy, wealth, or fundamentalism.
- **Conflict management processes** like mediation, are associated with movement toward positive peace.
- **Territorial norms** against conquest and violent succession, and supporting peaceful decolonization

# Three Challenges

- The Fear Problem
- The Frame Problem

# The Context: An Accelerating Crisis of Complexity

- In 2016, Jean Marie Guehenno, the President of the *International Crisis Group*, cautioned that we are today witnessing seismic shifts in the geopolitical world from hegemony and bilateralism to multilateralism to **a new crisis of complexity**, where non-state actors and NGOs and corporations and social networkers and hackers and social entrepreneurs and splinter groups wield as much or more power in the political realm than ever.




HUFFINGTON POST

# Middle East Relationships, Explained Through An Interactive Map

By Nick Robins-Early

10/30/2014 02:59 pm ET | Updated Dec 06, 2017

# The Context: An Accelerating Crisis of Complexity

- Guehenno argues that the international community's thinking, policies, practices and institutions have yet to catch up to this new reality, and are therefore becoming rapidly ineffectual and obsolete.

- Reflected in AGE Report, UN Res 65/283, 70/304, 2282, UNSG 2018 Report

# The Frame Problem

- Our thinking, models, measures and methods (frames) are linear.
- So the UN SP agenda, 17 SDGs and GPI/PPI are today described as complex systems
- BUT typically employ *systems light*

# Positive Peace Systems?

## 2012


## 2017


- 8 pillars
- 24 Indicators
- Distinct weights and effects
- Highly complex system

Number of Visitors

Democratic politics

Life Expectancy

Regional Integration

Government Effectiveness

Rule of Law

Social Mobility

Hostility to Foreigners

Poverty Gap

Fractionalized Elite

Mobile Phones

Free Press

Corruption Perceptions

World Press

Control of Corruption

Economic Freedom

Empowerment

Business Environment

Group Grievance

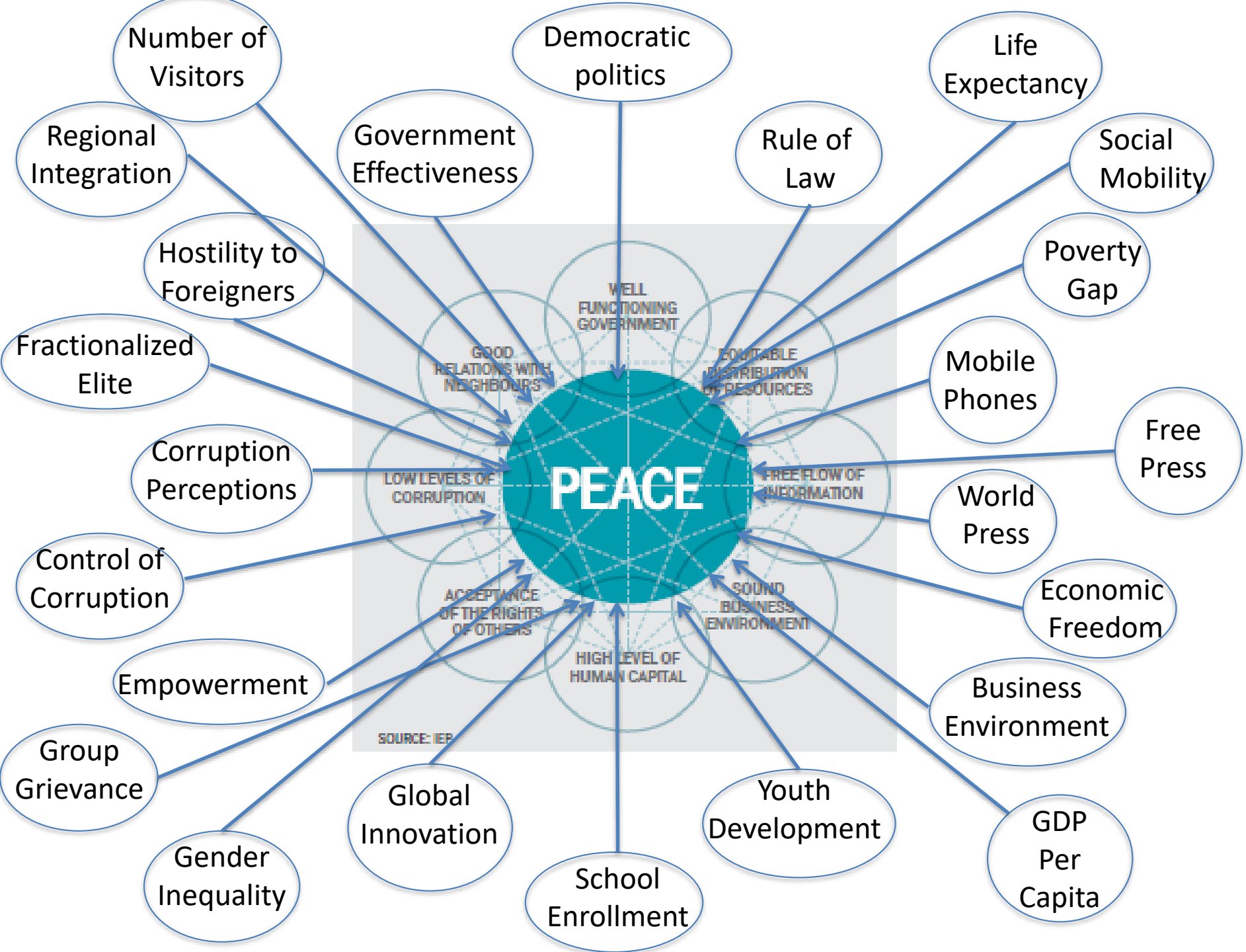
Global Innovation

Youth Development

GDP Per Capita

Gender Inequality

School Enrollment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GOOD RELATIONS WITH NEIGHBOURS
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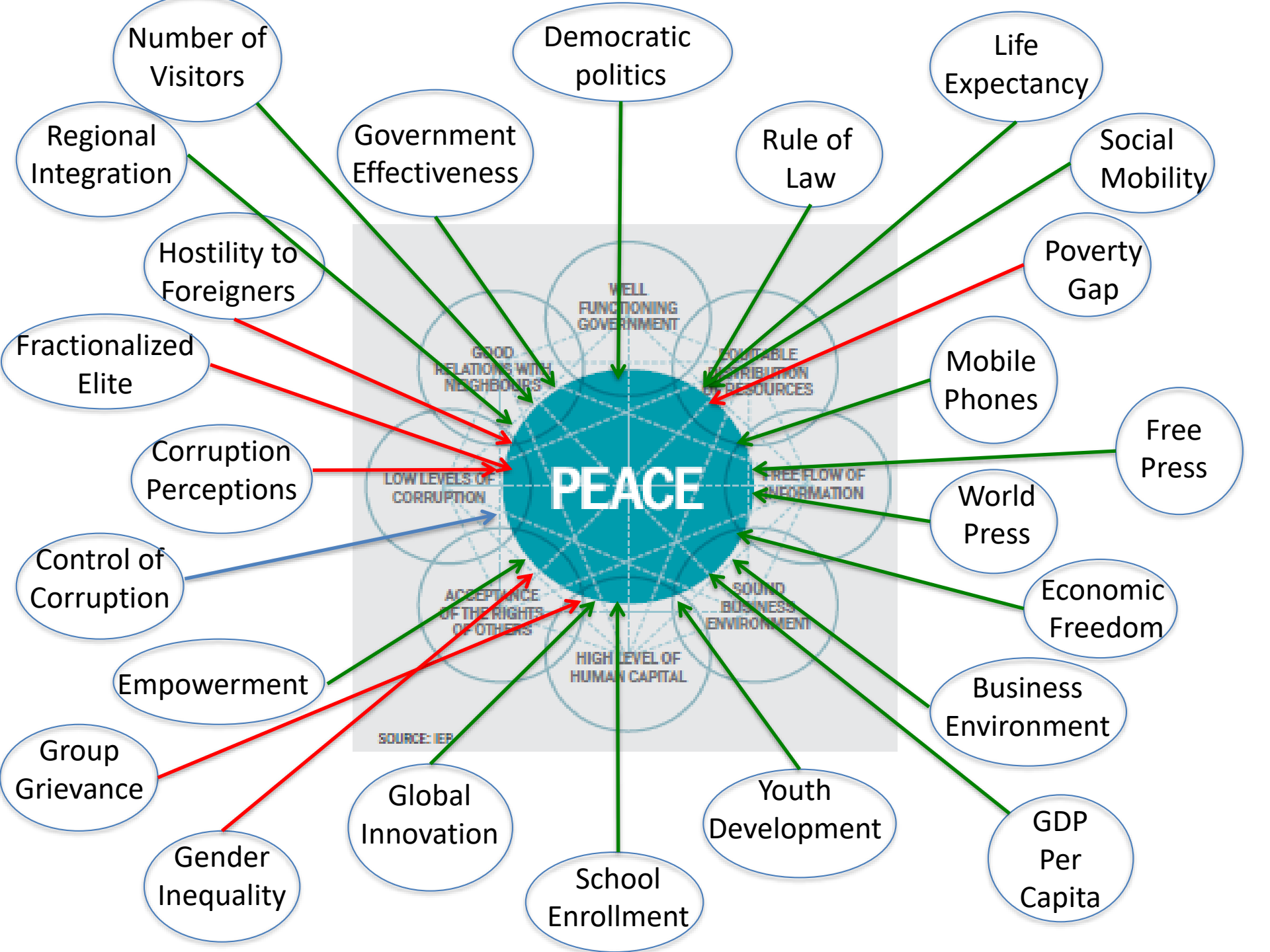
LOW LEVELS OF CORRUPTION
PEACE
FREE FLOW OF INFORMATION
ACCEPTANCE OF THE RIGHTS OF OTHERS
SOUND BUSINESS ENVIRONMENT
HIGH LEVEL OF HUMAN CAPITAL
SOURCE: IEP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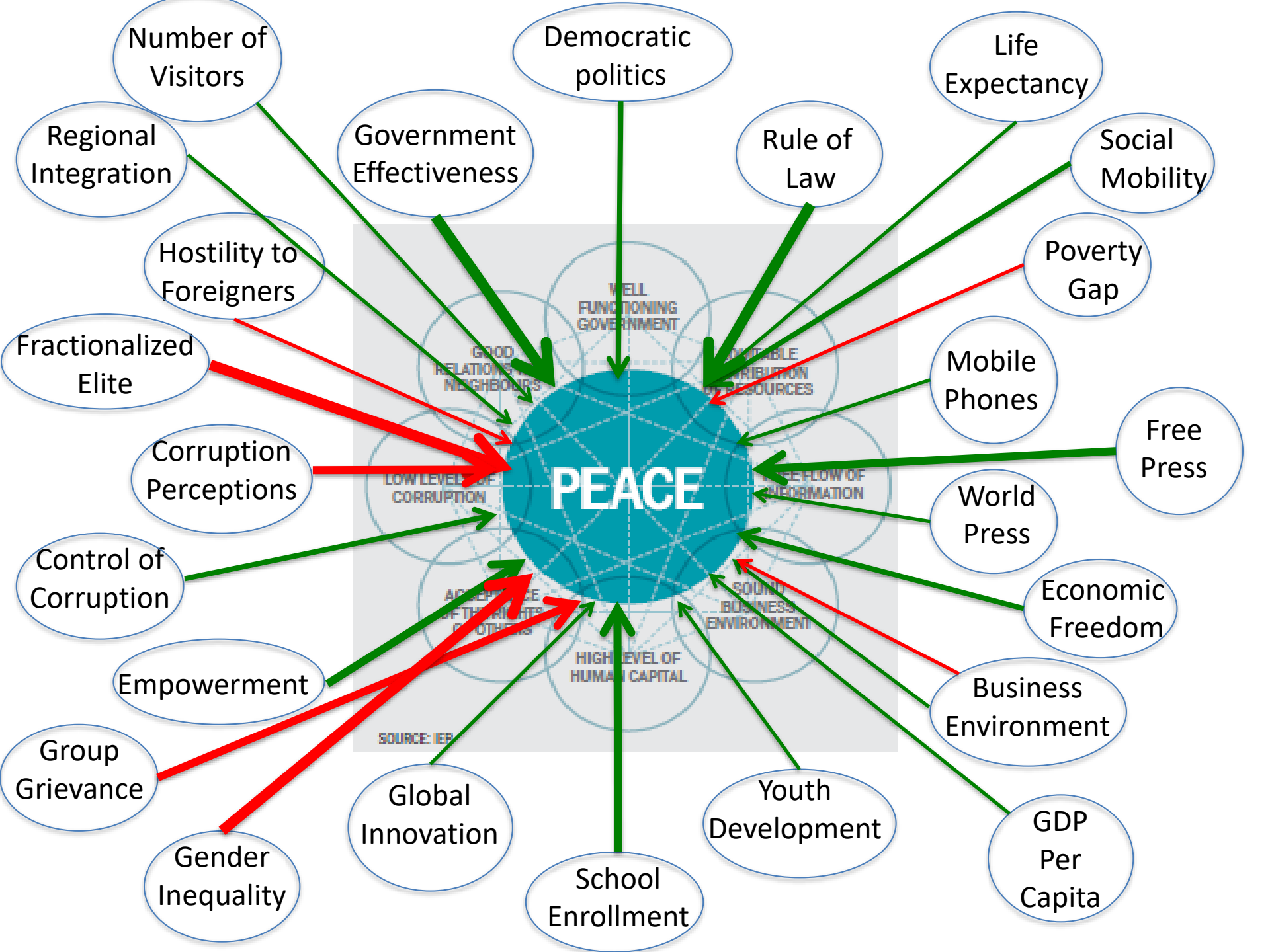
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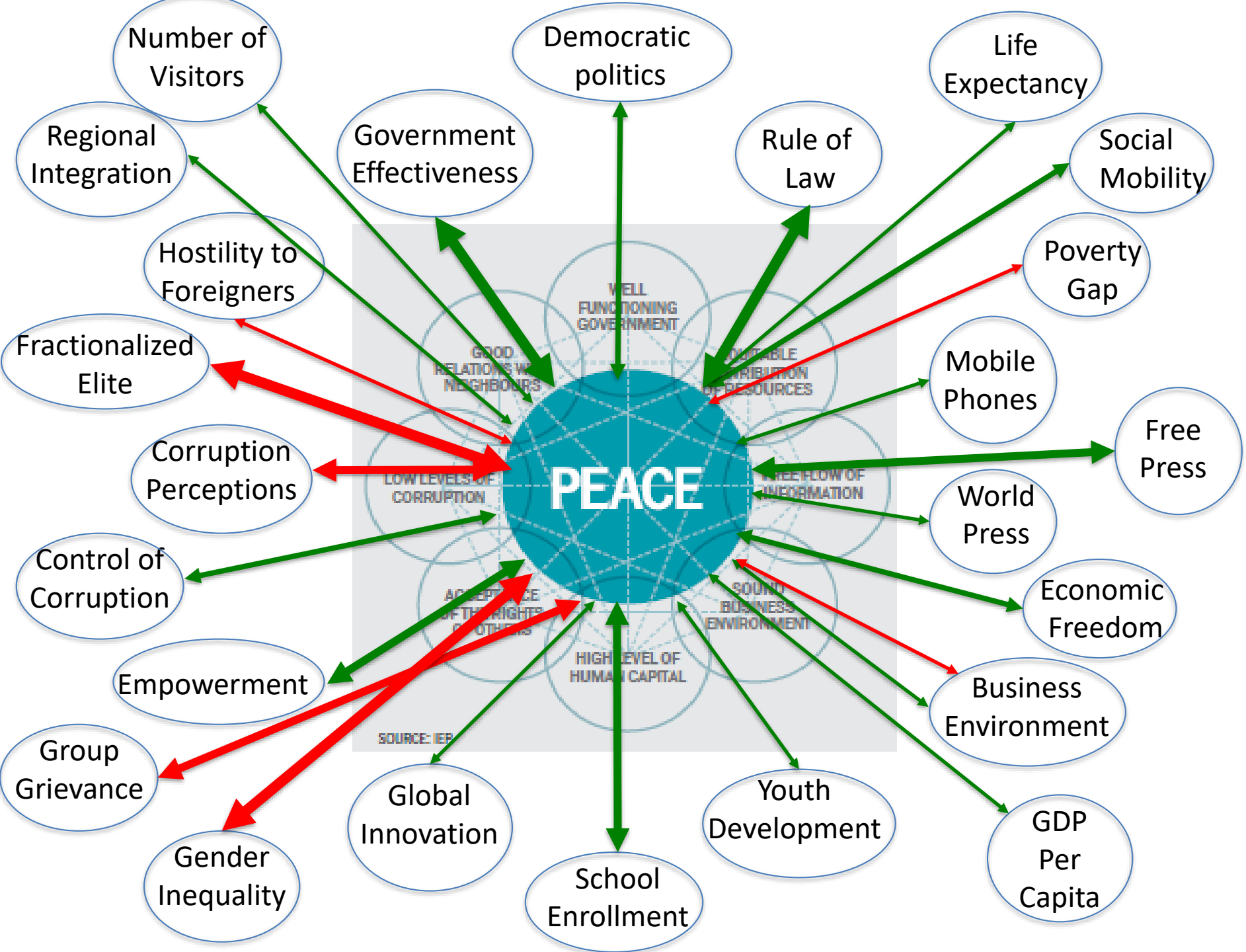
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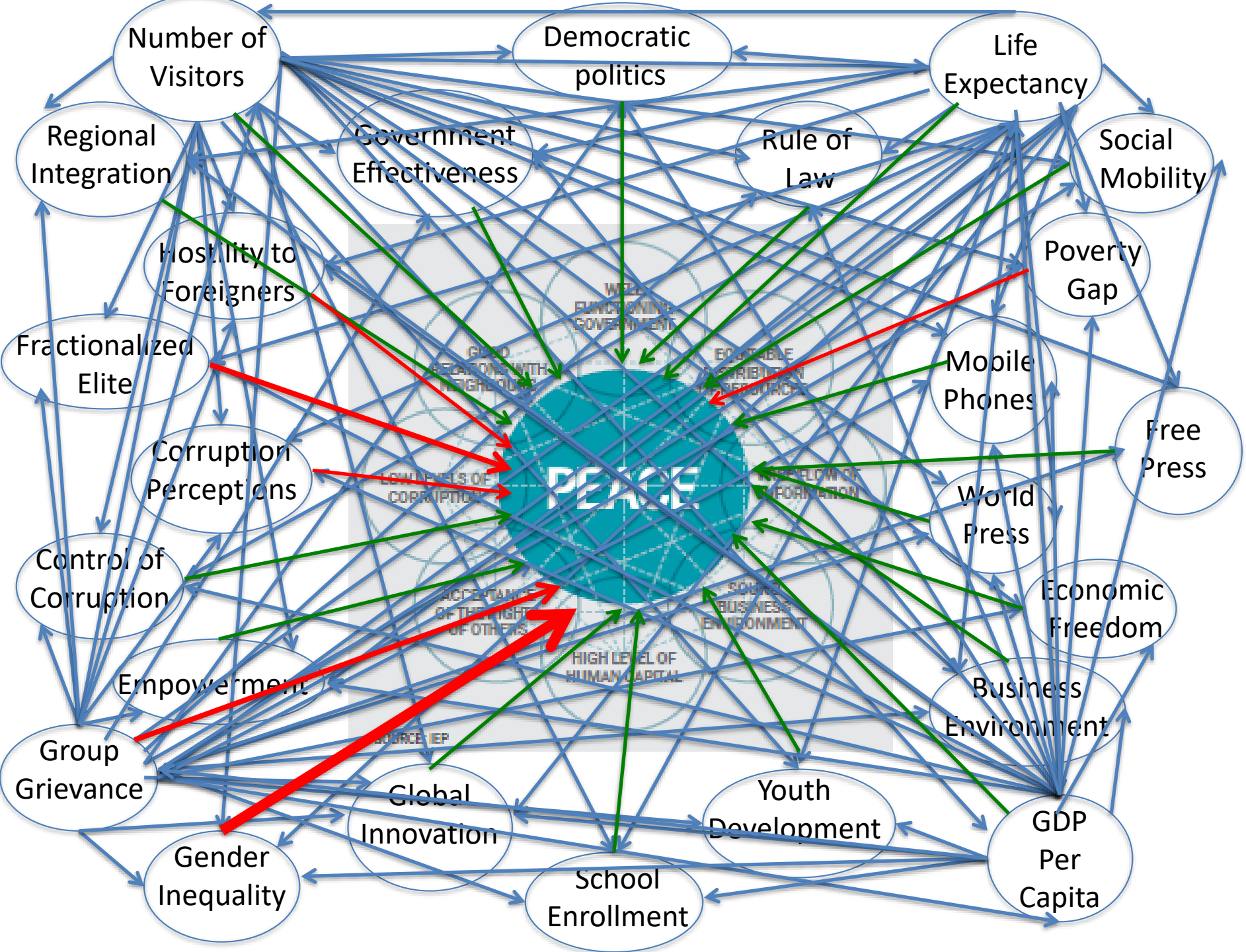
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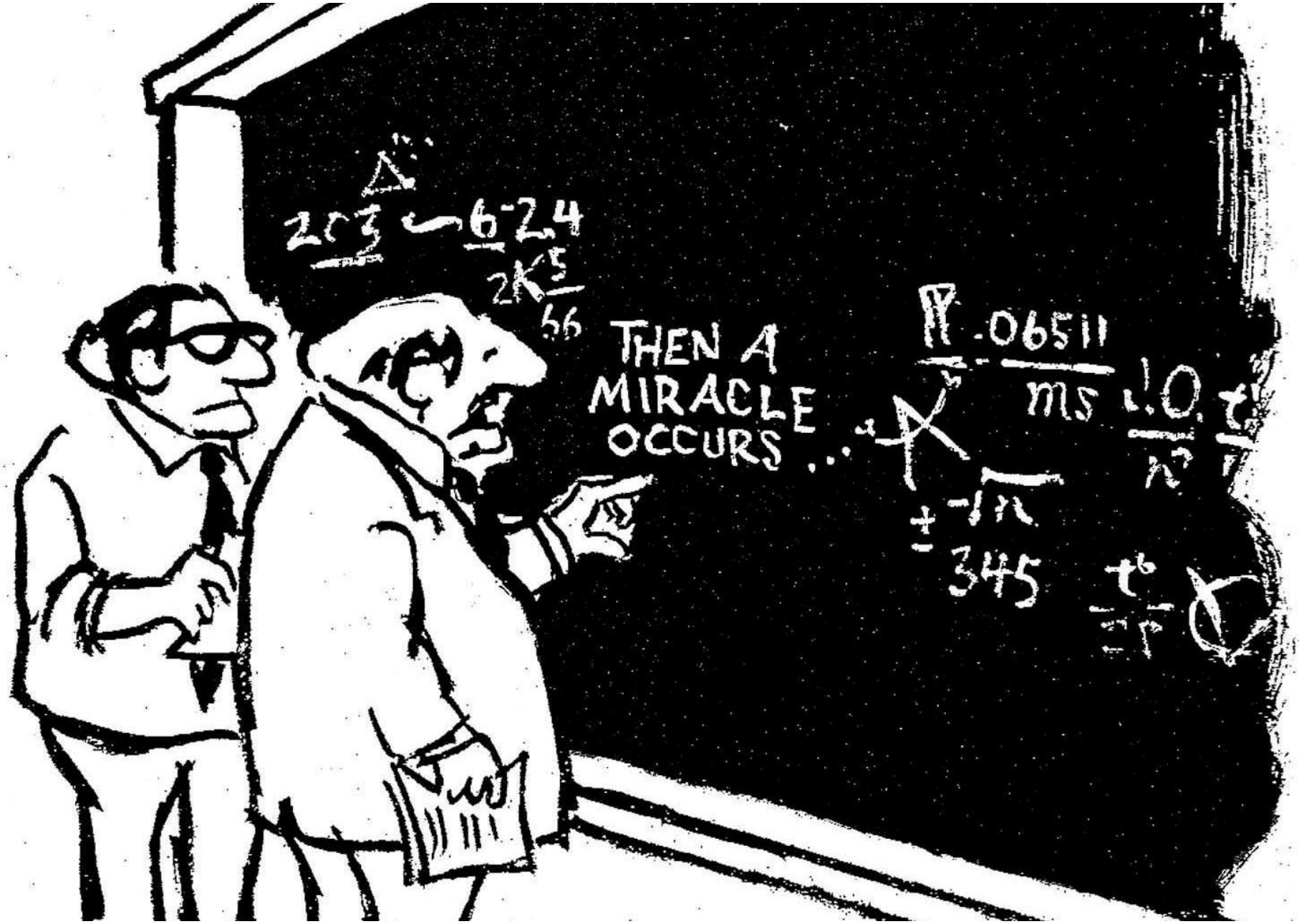

THEN A MIRACLE OCCURS...


- **17 Goals**
- **169 Targets**
- **304 Indicators = 92,416 interactions**
- **An immensely complex system**

# Three Challenges

- The Fear Problem
- The Frame Problem
- The Identity Problem

# The Identity Problem

- The 2015 AGE report: "sustaining peace… must be understood as a task that only national stakeholders can undertake. The United Nations and international actors can accompany and facilitate the process, *but not lead it*."
- Research finds top-down, one-size-fits-all approaches to policymaking and programming in peace and development are often ineffective and unsustainable.
- **Community-initiated programs** allow for more genuine inclusion of traditionally marginalized groups, such as women and youth.
- **However**, such mandates are often implemented as "**add-ons**" (UN particularly susceptible) or focus on **elites**.
- Rather than trying to envision, design and implement new solutions, **work more effectively *with* local communities to identify existing remedies and trends, and then to work *with* them to amplify their effects**.

# The Human Peace Project

- An ambitious attempt to employ **empirical research**, **complexity visualization**, **community stakeholder dialogues** and **mathematical modeling** to gain a holistic understanding of the dynamics of sustainably peaceful societies.

# The Human Peace Project Team

**Peter T. Coleman**: AC$^4$, The Earth Institute at Columbia University – *social psychology*

**Jaclyn Donahue**: AC$^4$, The Earth Institute at Columbia University – *international development*

**Joshua Fisher**: AC$^4$, The Earth Institute at Columbia University – *political science*

**Douglas P. Fry**: University of Alabama at Birmingham – *anthropology*

**Larry S. Liebovitch**: Queens College, CUNY – *astrophysics*

**Philippe Vandenbroeck**: shiftN – *philosophy*

# The Human Peace Project

- Building on the scholarship of Doug Fry, a visualization process developed by ***Foresight***, and decades of research.
- Working with over 70 top scientists from an array of fields conducting **empirical research** relevant to sustainably peaceful societies.
- **Developing a model of the core dynamics of sustainably peaceful societies and systems.**
- Identifying support for over 100 propositions from ethnographic case studies and published empirical articles from various disciplines.

# 4 Project Components:

- **Modeling and Mapping the Science** of Sustainable Peace – Systemic visualization of the science through Causal Loop Diagramming

# Defining Sustainable Peace

(Boulding, 1978)

**Sustainable peace** is a state where the probability of using destructive conflict and violence to solve problems is so low that it does not enter into any group's strategy, while the probability of using cooperation and dialogue to promote social justice and well-being is so high that it governs social organization and life.

# Technical Definition of Sustainable Peace for CLD

" A set of dynamics that result in the **emergence** of strong **attractor patterns** for constructive, peaceful interactions between groups and weak **attractors** for destructive, violent interactions."

# A Dual System Model of Sustainable Peace

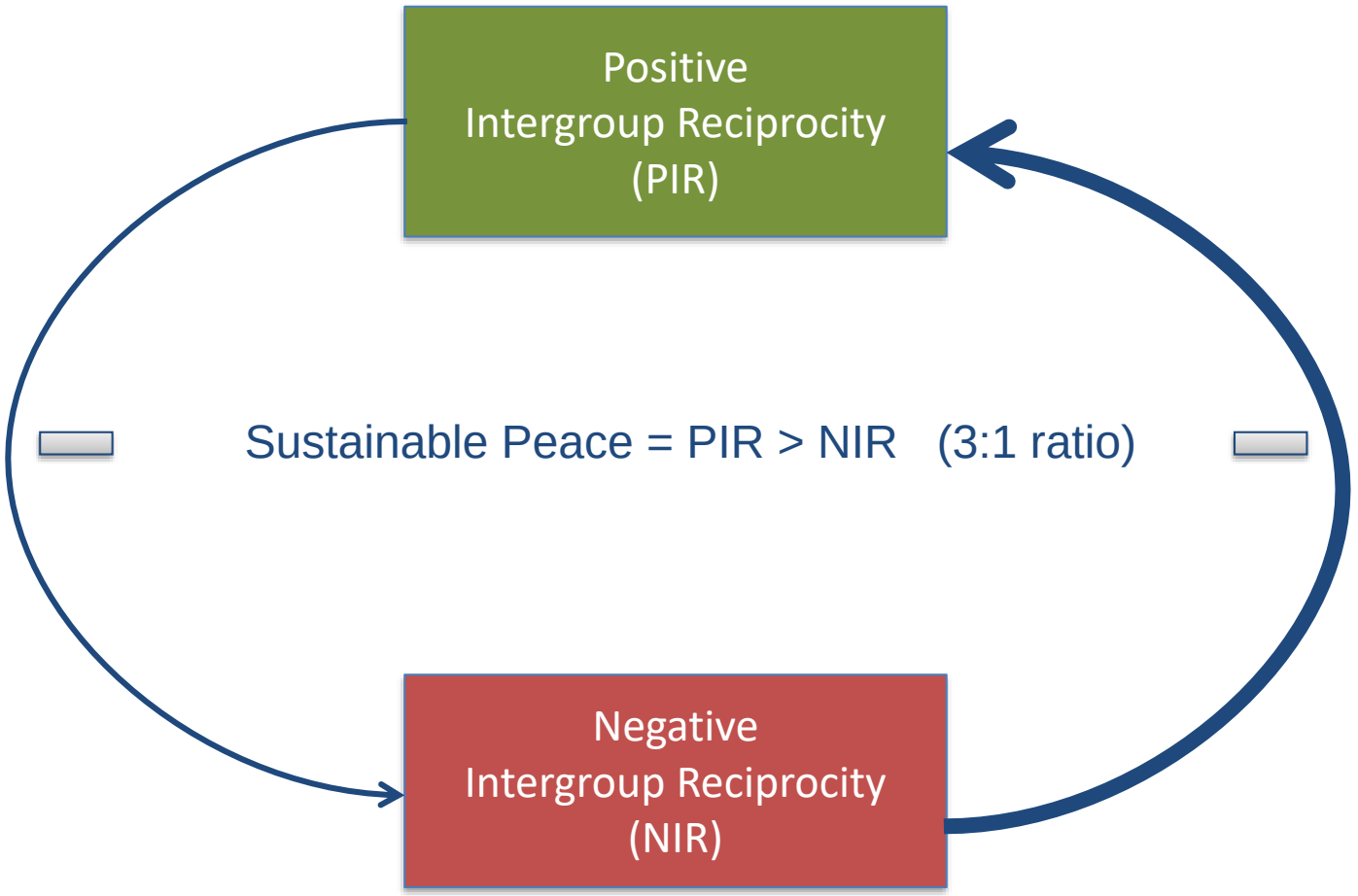
System I:
Strong Attractor for Constructive and Peaceful Intergroup Interactions

System II:
Weak Attractor for Destructive and Violent Intergroup Interactions

# Nodal Focus: The Essence

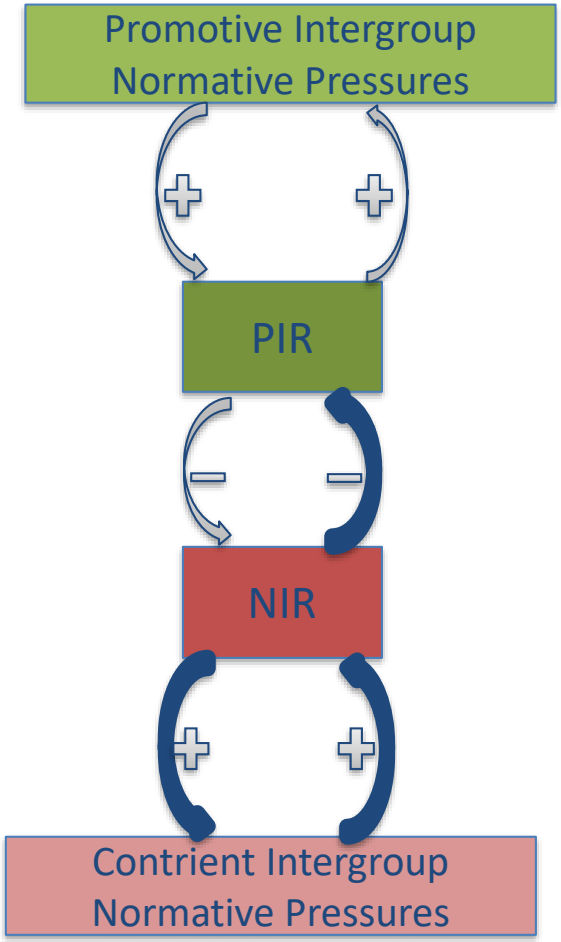
- Although many factors influence peacefulness in communities, at its core it is quite **simply a function of how members of different groups** (national, political, ethnic, and so on) **mutually treat one another**.
- The more of acts of reciprocal kindness, respect, inclusion, etc., to acts of hate, contempt, exclusion, etc., the better the chances of sustaining peace.
- These basic interactions, multiplied a million times over daily, bubble up to create norms, institutions and cultures that sustain peace.

# The Nodal Focus

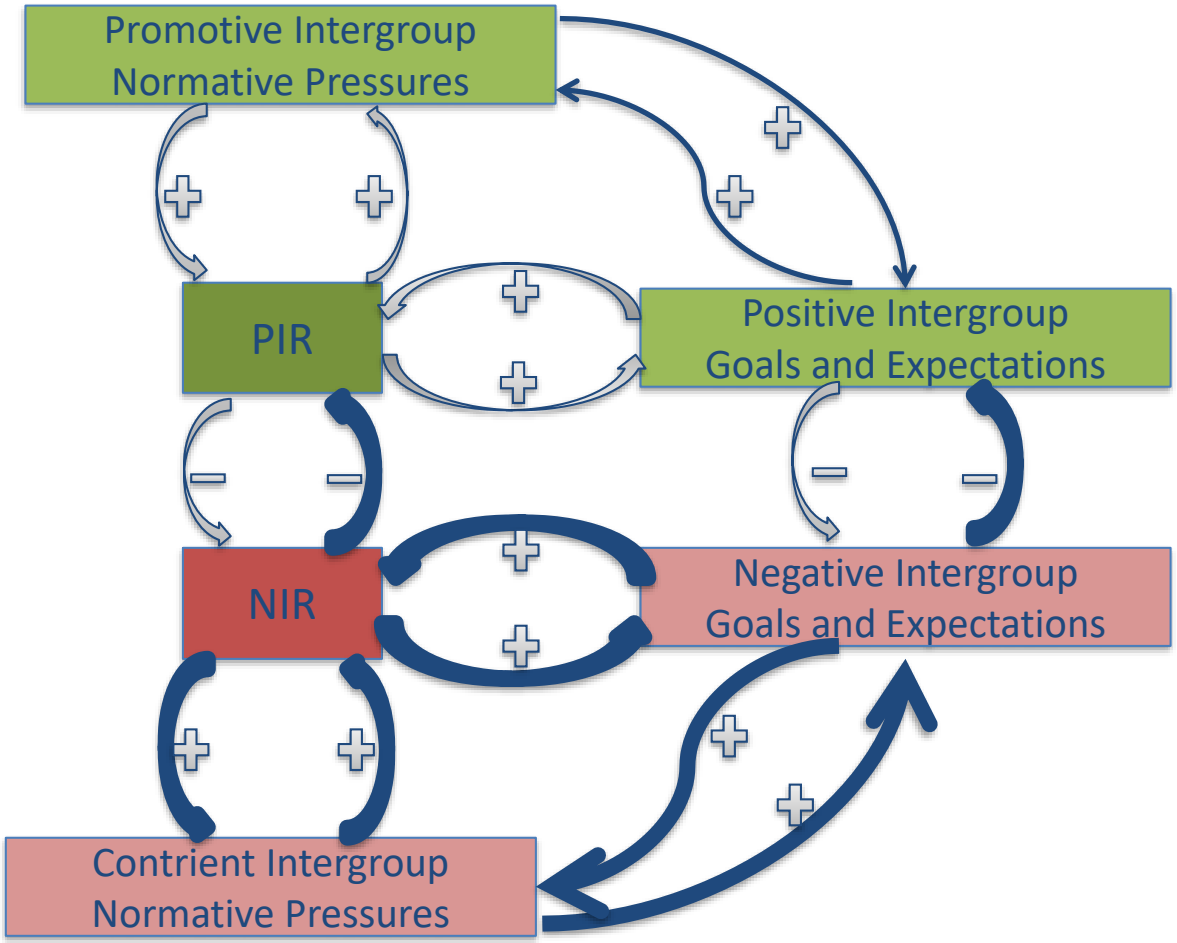



We define **the Nodal Focus** of the model of sustainable peace as the ***ratio of Positive Intergroup Reciprocity (PIR) to Negative Intergroup Reciprocity (NIR)*.**

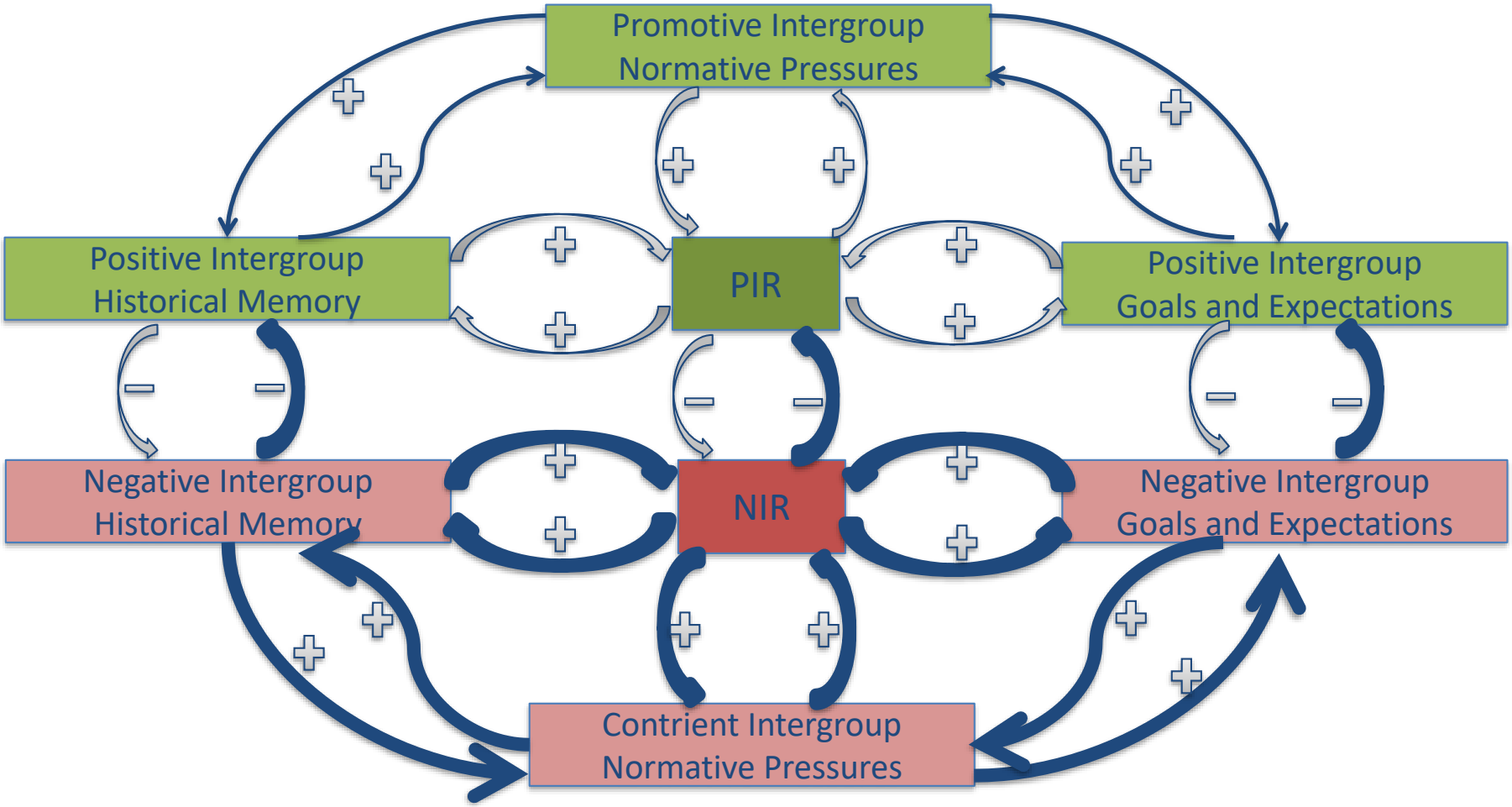
# Intergroup Normative Pressures in the *Present*

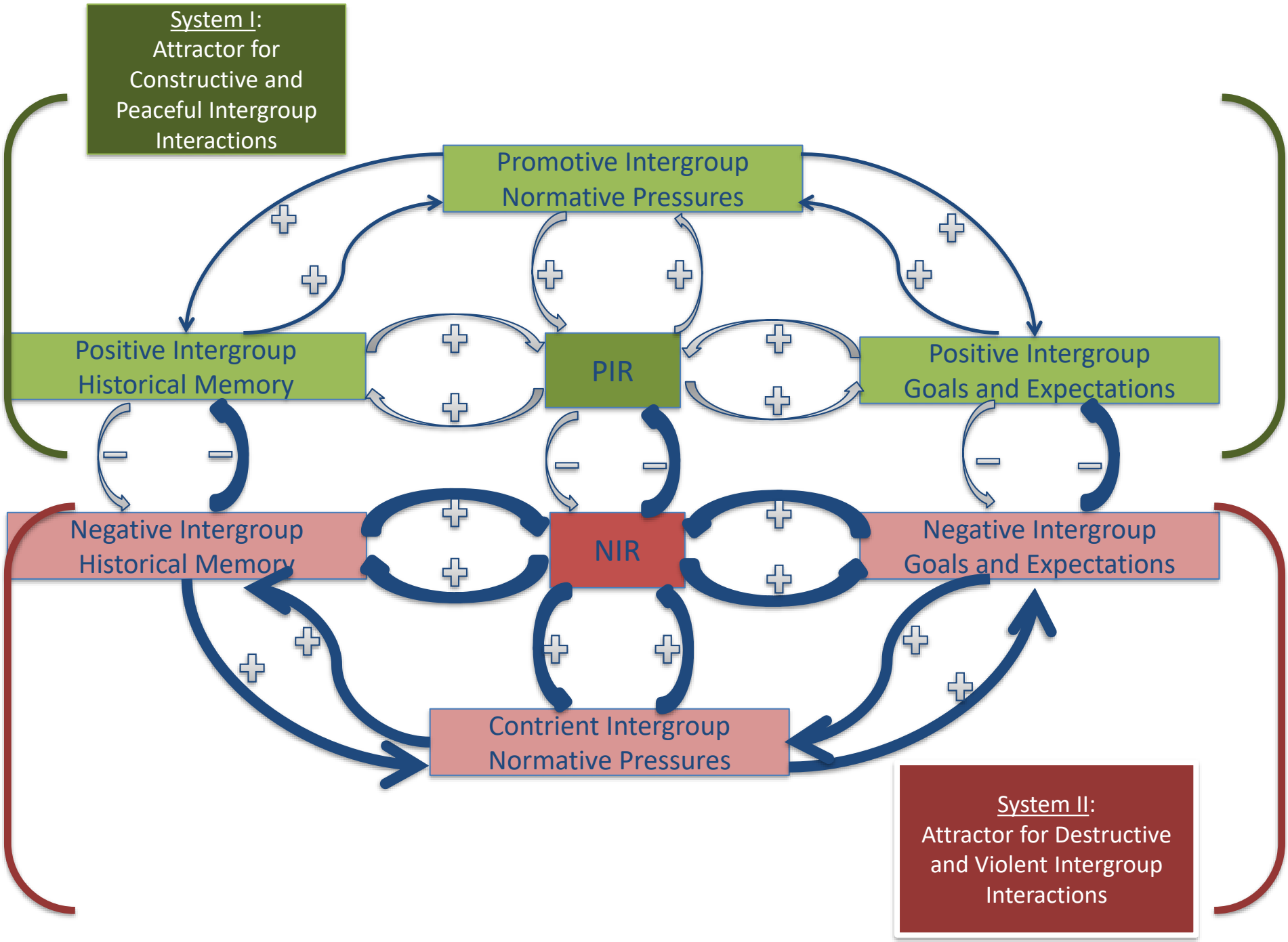


# Intergroup Goals & Expectations
## *Of the Future*

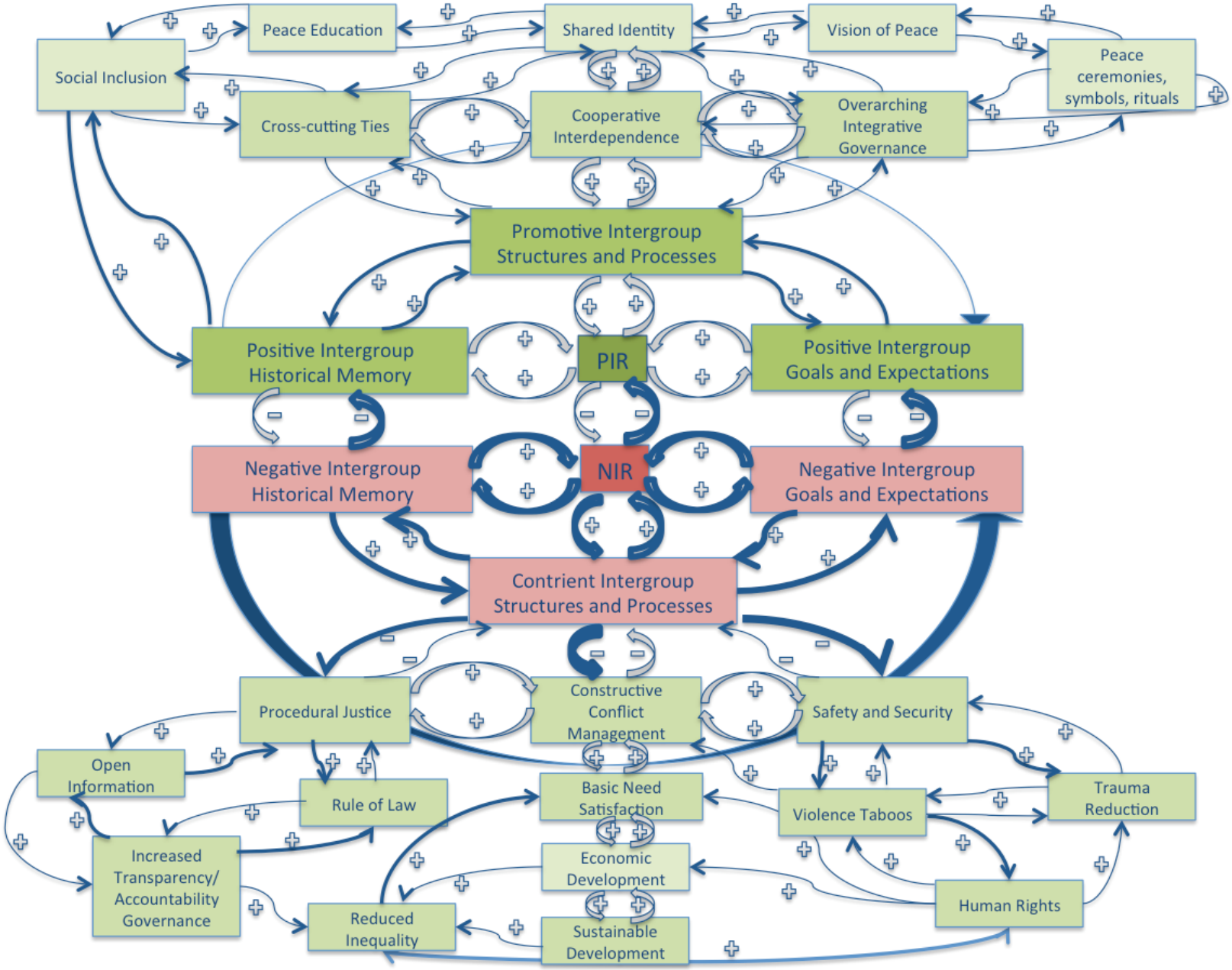


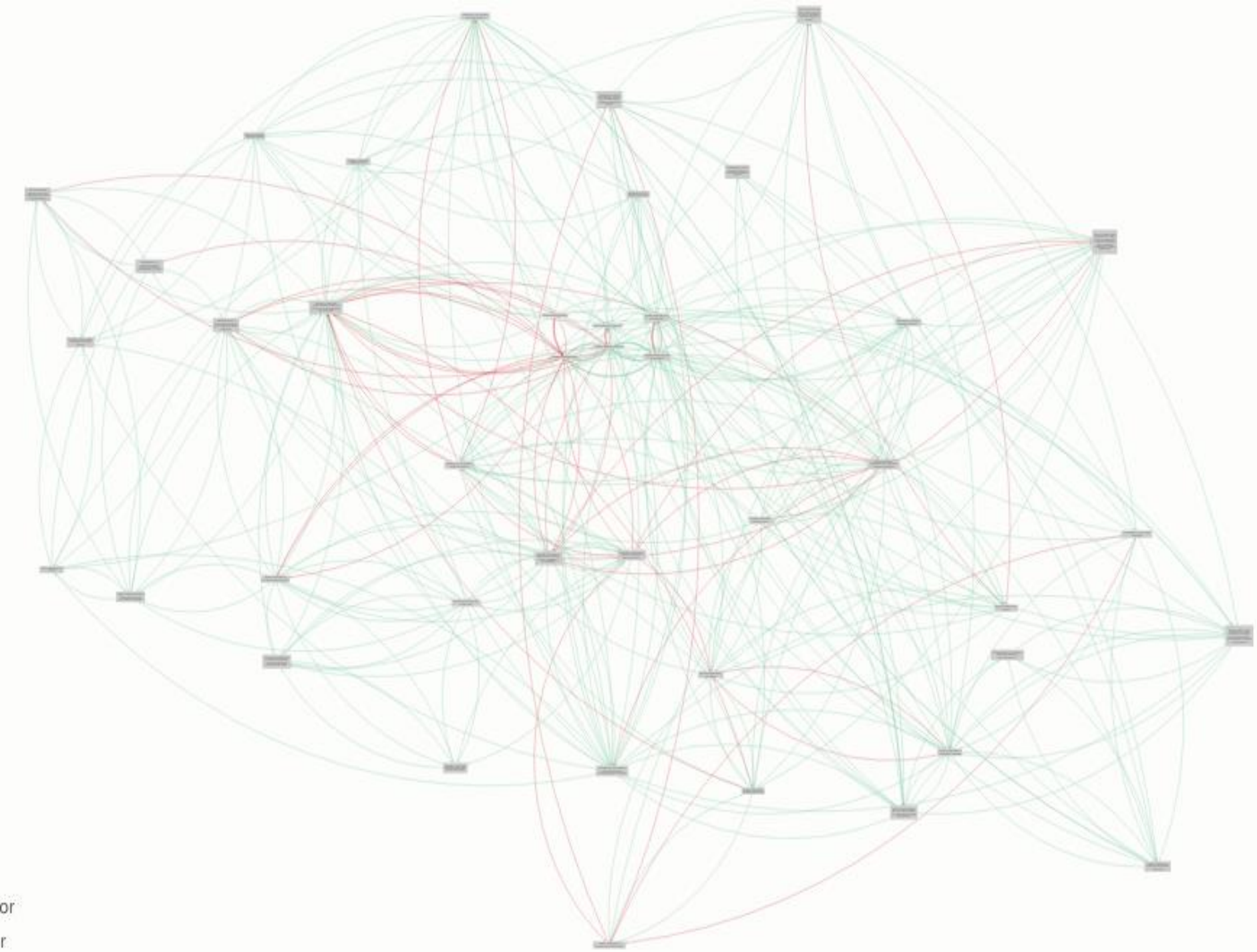
# Intergroup Historical Memory
## *Of the Past*




System I:
Attractor for Constructive and Peaceful Intergroup Interactions
Promotive Intergroup Normative Pressures
Positive Intergroup Historical Memory
PIR
Positive Intergroup Goals and Expectations
Negative Intergroup Historical Memory
NIR
Negative Intergroup Goals and Expectations
Contrient Intergroup Normative Pressures
System II:
Attractor for Destructive and Violent Intergroup Interactions

# Causal Loop Diagram (CLD)





or

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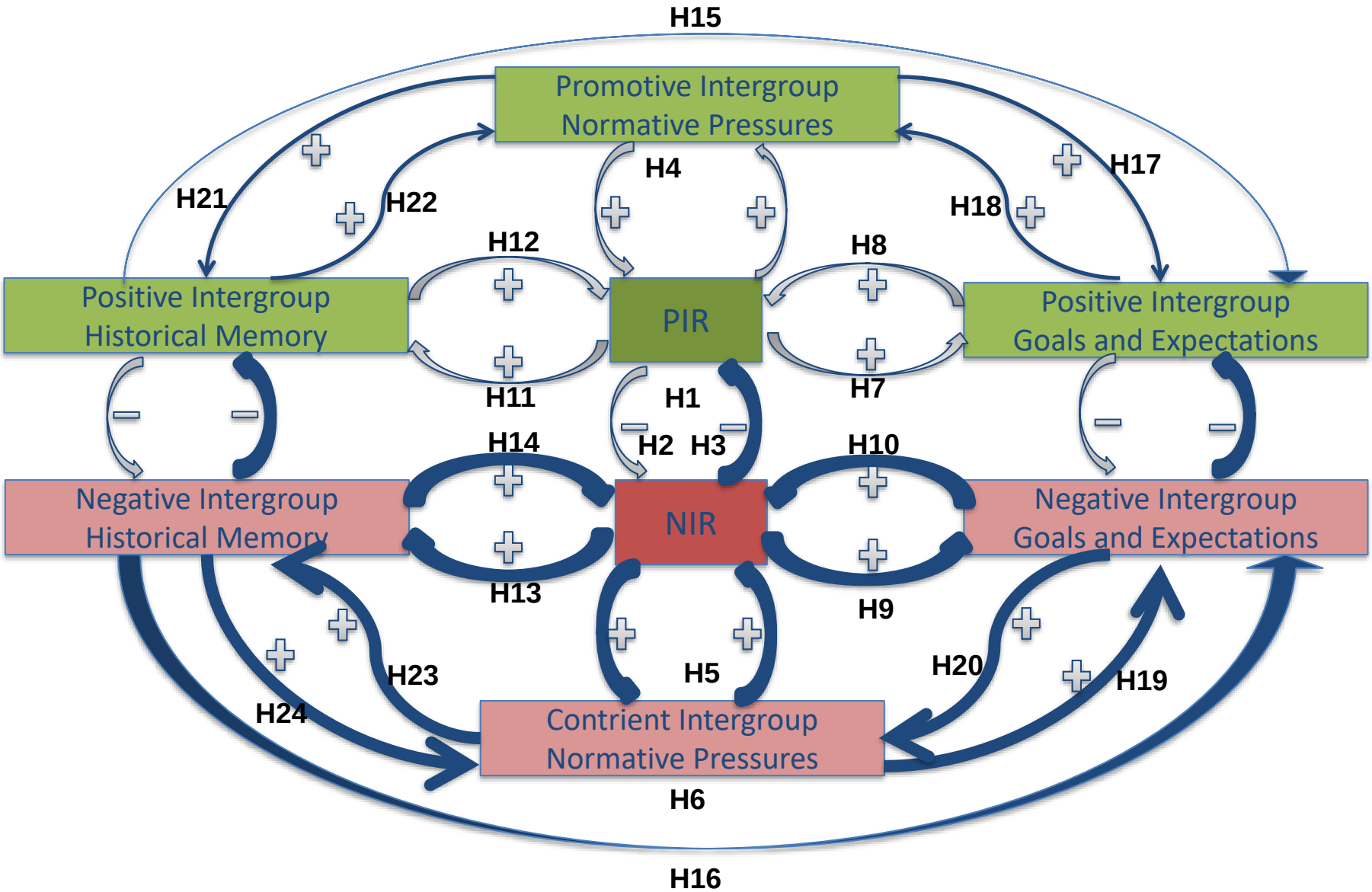
# 4 Project Components:

- **Mapping the Science** of Sustainable Peace – Systemic visualization of the science through Causal Loop Diagramming
- **Testing the Core Propositions** - Validation of the model through data survey and analysis

# Validation of the Model through Proposition Verification



# Core SP Propositions

- **Proposition 1:** Higher ratios of Positive Intergroup Reciprocity to Negative Intergroup Reciprocity will lead to higher probabilities of sustainable peacefulness.
- **Proposition 2:** Differences in the relative power between members of two groups will result in a magnifying effect of the *impact* of both PIR and NIR on members of lower power groups and a minimizing effect of both types of reciprocity on members of higher power groups.
- **Proposition 3:** Differences in the relative power between two groups will result in a higher likelihood of PIR and NIR being *initiated* by members of higher power groups and a lower likelihood of them being initiated by members of lower power groups.
- **Proposition 4**: Institutions, structures and processes that promote positive intergroup relations in the present will lead to higher levels of normative pressure for PIR resulting in an increase in Positive Intergroup Reciprocity.
- **Proposition 4a**: Higher levels of Positive Intergroup Reciprocity will increase the strength of institutions, structures and processes that promote positive intergroup relations.
- **Proposition 5**: Institutions, structures and processes that promote contrient intergroup relations will lead to higher levels of normative pressure for NIR resulting in an increase in Negative Intergroup Reciprocity.
- **Proposition 5a**: Higher levels of Negative Intergroup Reciprocity will increase the strength of institutions, structures and processes that promote contrient intergroup relations.
- **Proposition 6:** Institutions, structures and processes that mitigate intergroup competition, polarization, hardship and violence will lead to lower levels of NIR.
- **Proposition 7**: Positive Intergroup Reciprocity will lead to higher levels of positive goals and expectations for future interactions with members of the same groups.
- **Proposition 7a**: Positive intergroup goals and expectations for future interactions with members of groups will lead to higher levels of Positive Intergroup Reciprocity.
- **Proposition 8**: Negative Intergroup Reciprocity will lead to higher levels of negative goals and expectations for future interactions with members of the same group.
- **Proposition 8a**: Negative intergroup goals and expectations for future interactions with members of a group will lead to higher levels of Negative Intergroup Reciprocity.
- **Proposition 9**: Stronger accounts of Positive Intergroup History will lead to higher levels of Positive Intergroup Reciprocity.
- **Proposition 9a**: Higher levels of Positive Intergroup Reciprocity will lead to stronger accounts of Positive Intergroup History.
- **Proposition 10**: Stronger accounts of Negative Intergroup History will lead to higher incidents of Negative Intergroup Reciprocity.
- **Proposition 10a**: Higher levels of Negative Intergroup Reciprocity will lead to stronger accounts of Negative Intergroup History.
- **Proposition 11**: Higher levels of Positive Intergroup History will lead to higher levels of Positive Goals and Expectations.
- **Proposition 12**: Higher levels of Negative Intergroup History will lead to higher levels of Negative Goals and Expectations.
- **Proposition 13**: Positive Intergroup History will lead to increased strength of Promotive Intergroup Normative Pressures.
- **Proposition 13a**: Promotive Intergroup Normative Pressures will lead to stronger Positive Intergroup History.
- **Proposition 14**: Negative Intergroup History will lead to increased strength of Contrient Intergroup Normative Pressures.
- **Proposition 14a**: Contrient Intergroup Normative Pressures will lead to stronger Negative Intergroup History.
- **Proposition 15**: Promotive Intergroup Normative Pressures will lead to higher levels of Positive Intergroup Goals and Expectations.
- **Proposition 15s**: Higher levels of Positive Intergroup Goals and Expectations will lead to stronger Promotive Intergroup Normative Pressures.
- **Proposition 16**: Contrient Intergroup Normative Pressures will lead to higher levels of Negative Intergroup Goals and Expectations.
- **Proposition 16a**: Higher levels of Negative Intergroup Goals and Expectations will lead to stronger Contrient Intergroup Normative Pressures.

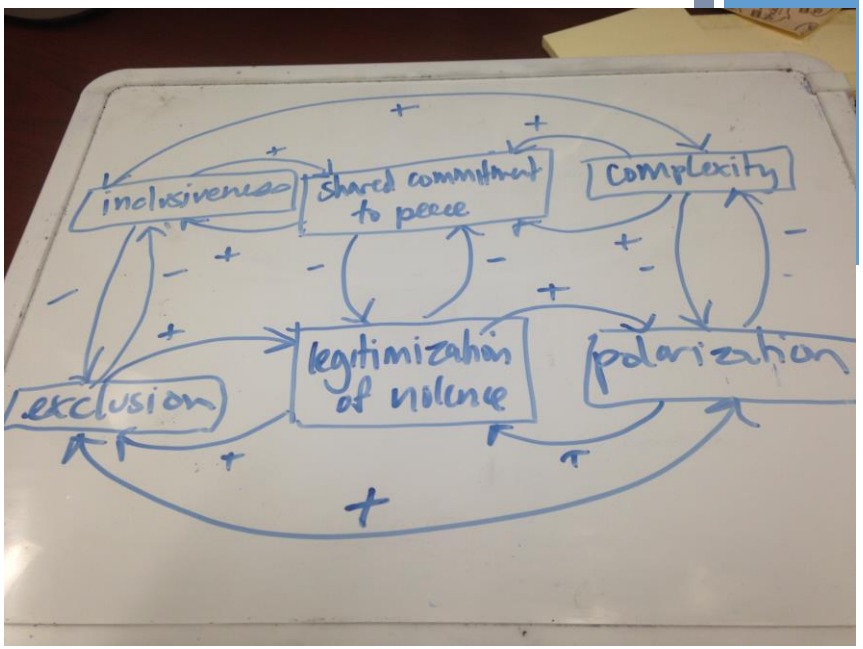
# The Process: Validation of the Model through Proposition Verification

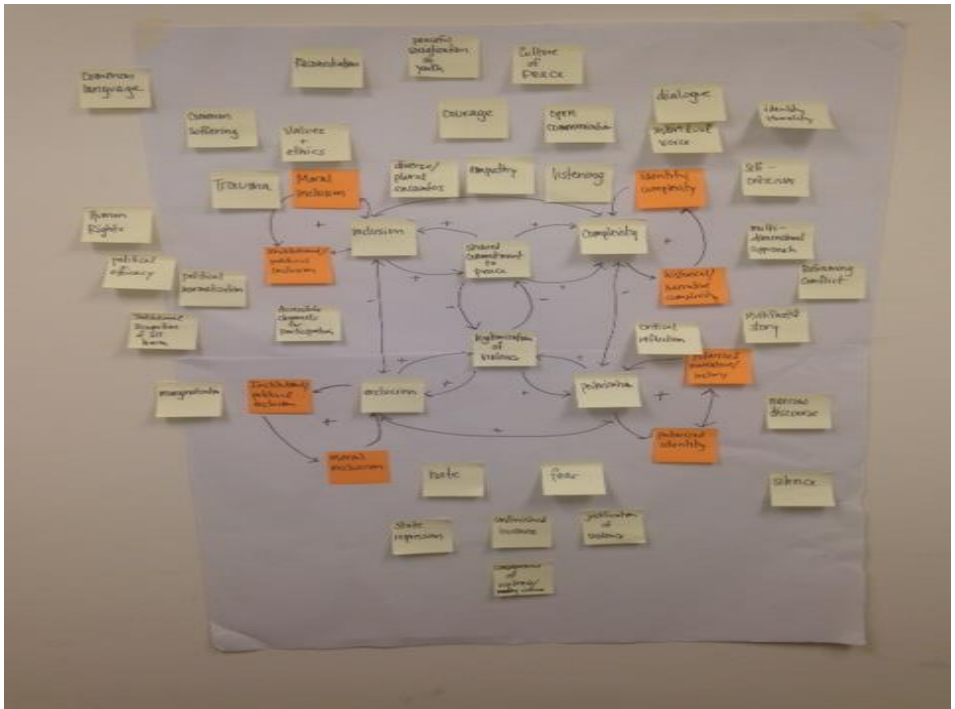
- Identifying **empirical studies** in peer-reviewed journals
- Estimating **effect sizes** for each proposition
- **Recoding ethnographic data** on peaceful and warring societies
- Applying **Machine learning** to ethnographies
- **Building an evidence base** with 100s of studies supporting the model to date

# 4 Project Components:

- **Mapping the Science** of Sustainable Peace – Systemic visualization of the science through Causal Loop Diagramming
- **Testing the Core Propositions** - Validation of the model through data survey and analysis
- **Learning with Communities** - Verification and refinement through ground-truthing with peaceful communities and those struggling to sustain peace.

# Peace Mapping in the Basque



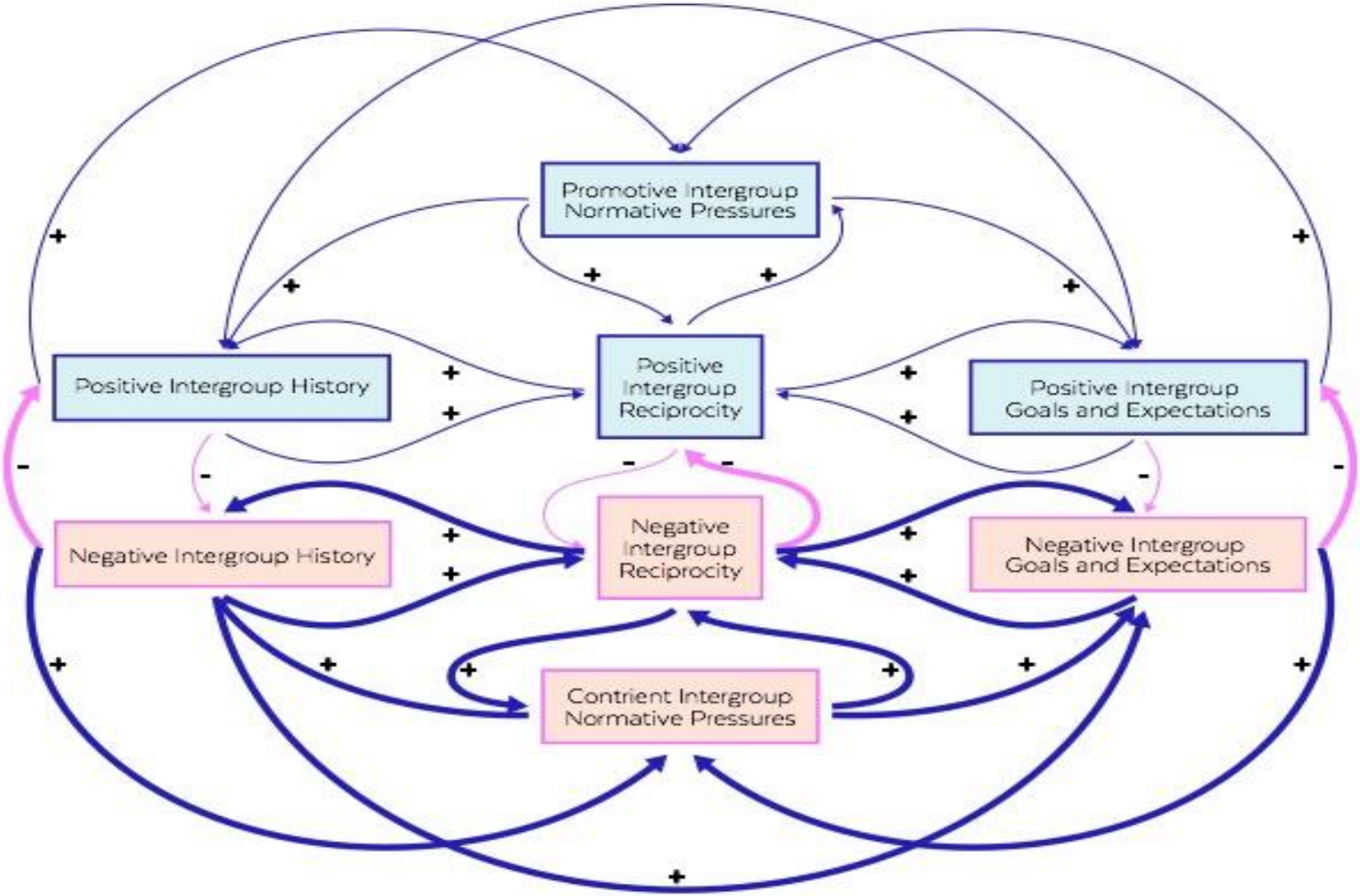
# Global-Local Dialogues

- **Ground-truthing** is a novel method of qualitative data collection and dialogue facilitation that:
  - Relies on engagement with community stakeholders to verify, refine, or challenge models;
  - Employs evidence-based scientific models to help guide community discourse on SP.
- **Emphasis on effective local initiatives**
- **Basque**, **Afghanistan**, Northern Ireland, Belgium, Switzerland, Costa Rica.

# 4 Project Components:

- **Mapping the Science** of Sustainable Peace – Systemic visualization of the science through Causal Loop Diagramming
- **Testing the Core Hypotheses** - Validation of the model through data survey and analysis
- **Learning with Communities** - Verification and refinement through ground-truthing with peaceful communities and those struggling to sustain peace
- Discovery and refinement of the model through **Mathematical Modeling**.

# Core Engine of Model of



# Turning a CLD into Equations

$$\frac{dx_i}{dt} = -|m|x_i + b + \sum_{j=1}^{n} c_{ij} \tanh(x_j)$$

How the variable $x_i$ changes in time

$x_i$ getting too big? – reduce it (proportionately); m is also the time scale for changes

Each variable stimulates its own growth (auto-catalytic) (actually b = 0)

Effects of other variables:

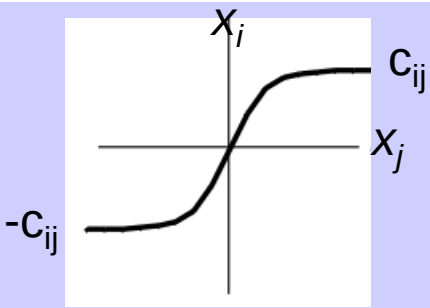
$c_{ij}$ = strength of the effect of $x_j$ on $x_i$

$c_{ij} > 0$, positive

$c_{ij} < 0$, negative

low value of $x_j$: the effect of $x_j$ on $x_i$ is proportional, = to $x_j$

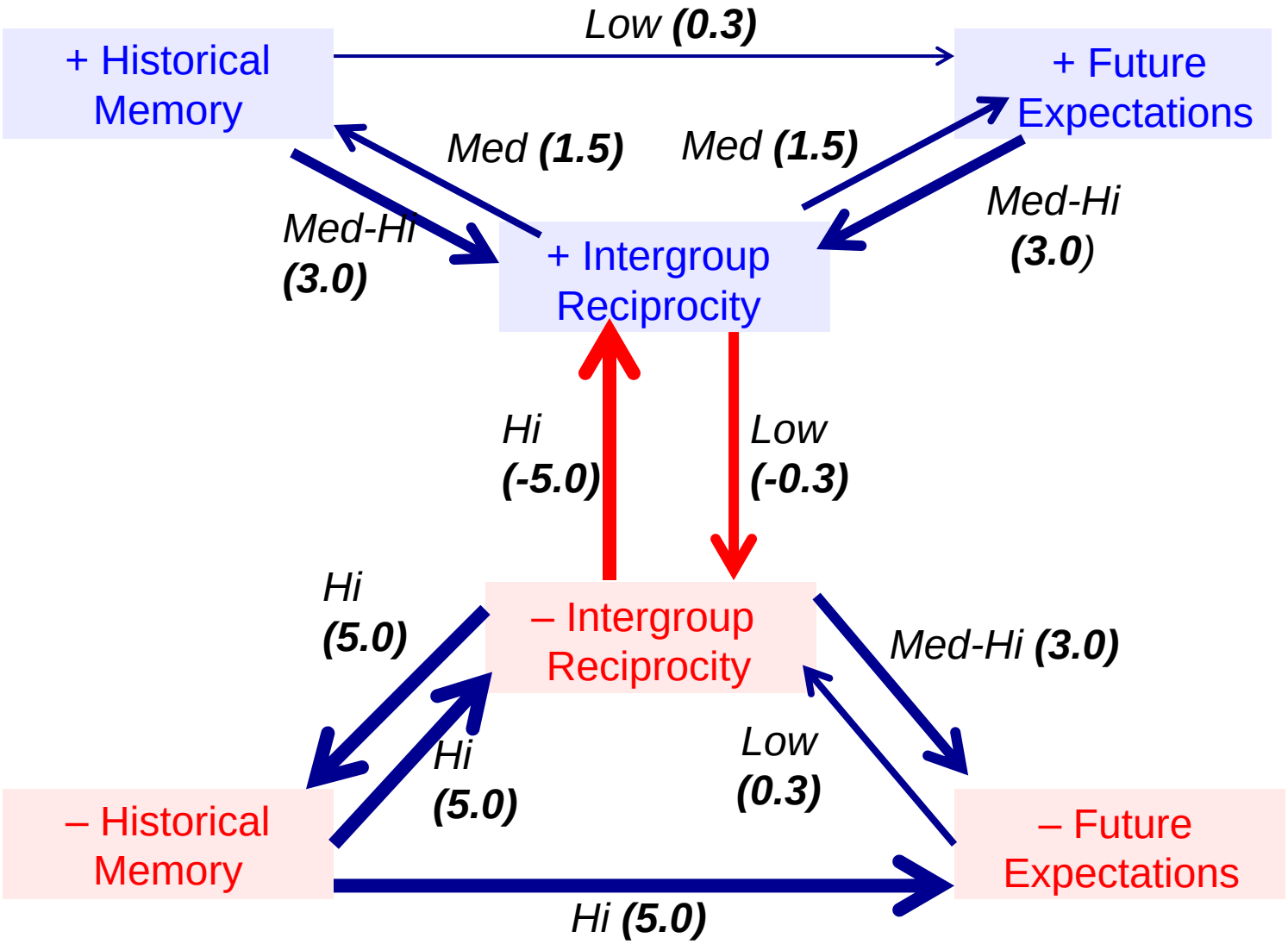
high value of $x_j$: the effect of $x_j$ on $x_i$ reaches a threshold, = $\pm c_{ij}$

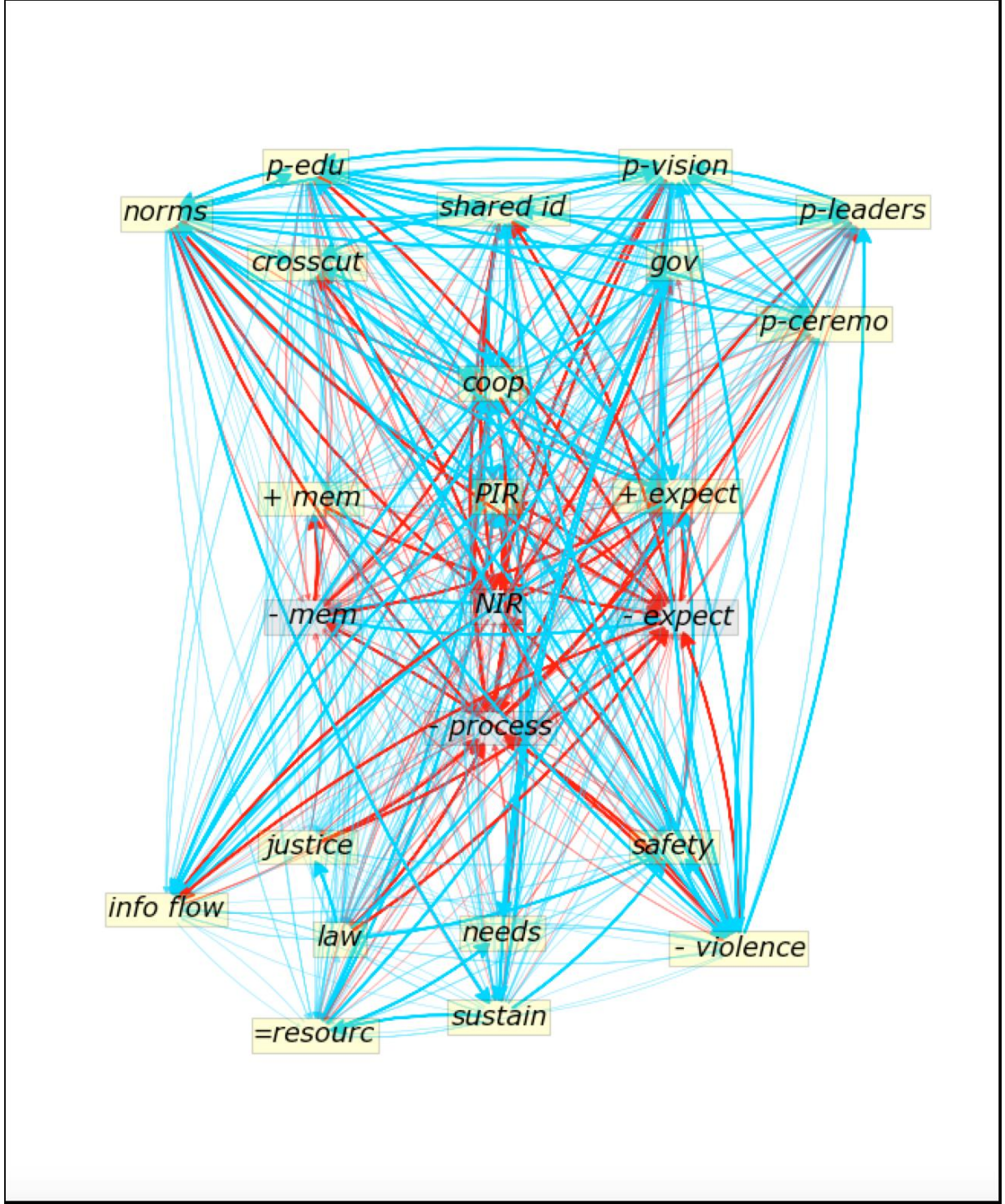



Numerical Integration in time.

$$x_i(t + \Delta t) = x_i(t) + \Delta t \left\{ -|m|x_i(t) + b + \sum_{j=1}^{n} c_{ij} \tanh\left(x_j(t)\right) \right\}$$

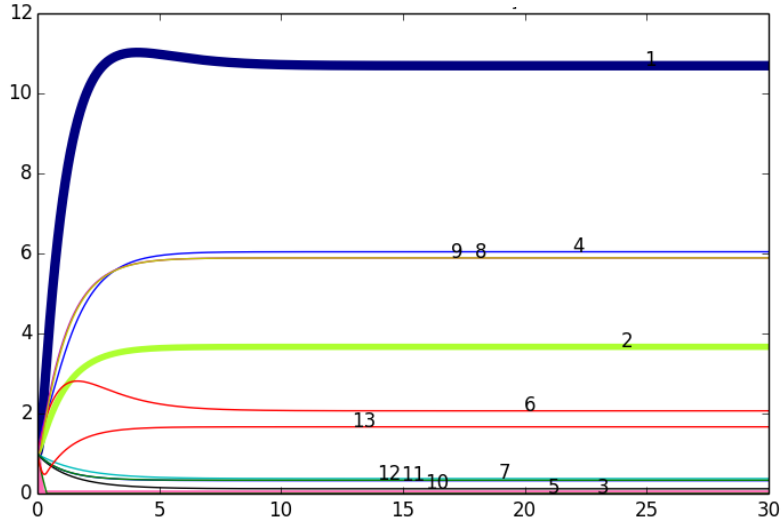
# Core Engine
# Sustainable Peace Map



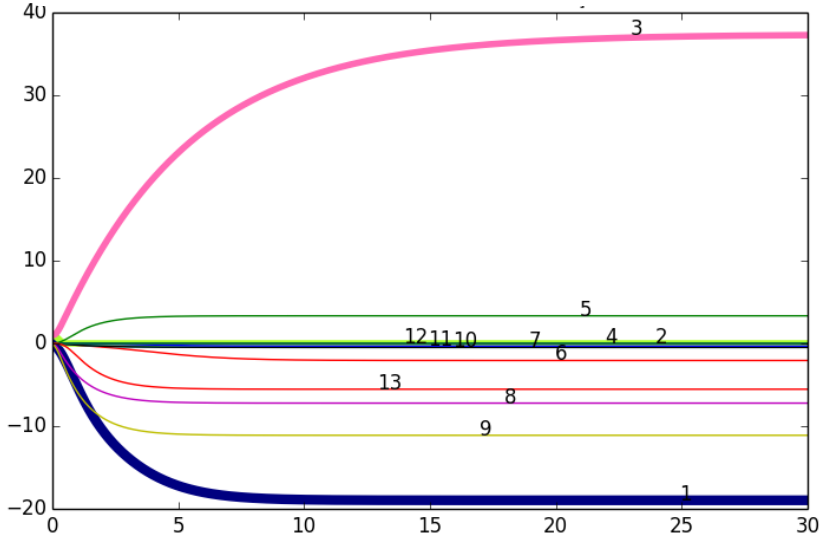

p-edu
p-vision
norms
shared id
p-leaders
crosscut
gov
p-ceremo
coop
+ mem
PIR
+ expect
NIR
- mem
- expect
- process
justice
safety
info flow
law
needs
- violence
sustain
=resourc

# The Mathematical Model Illustrates System Properties

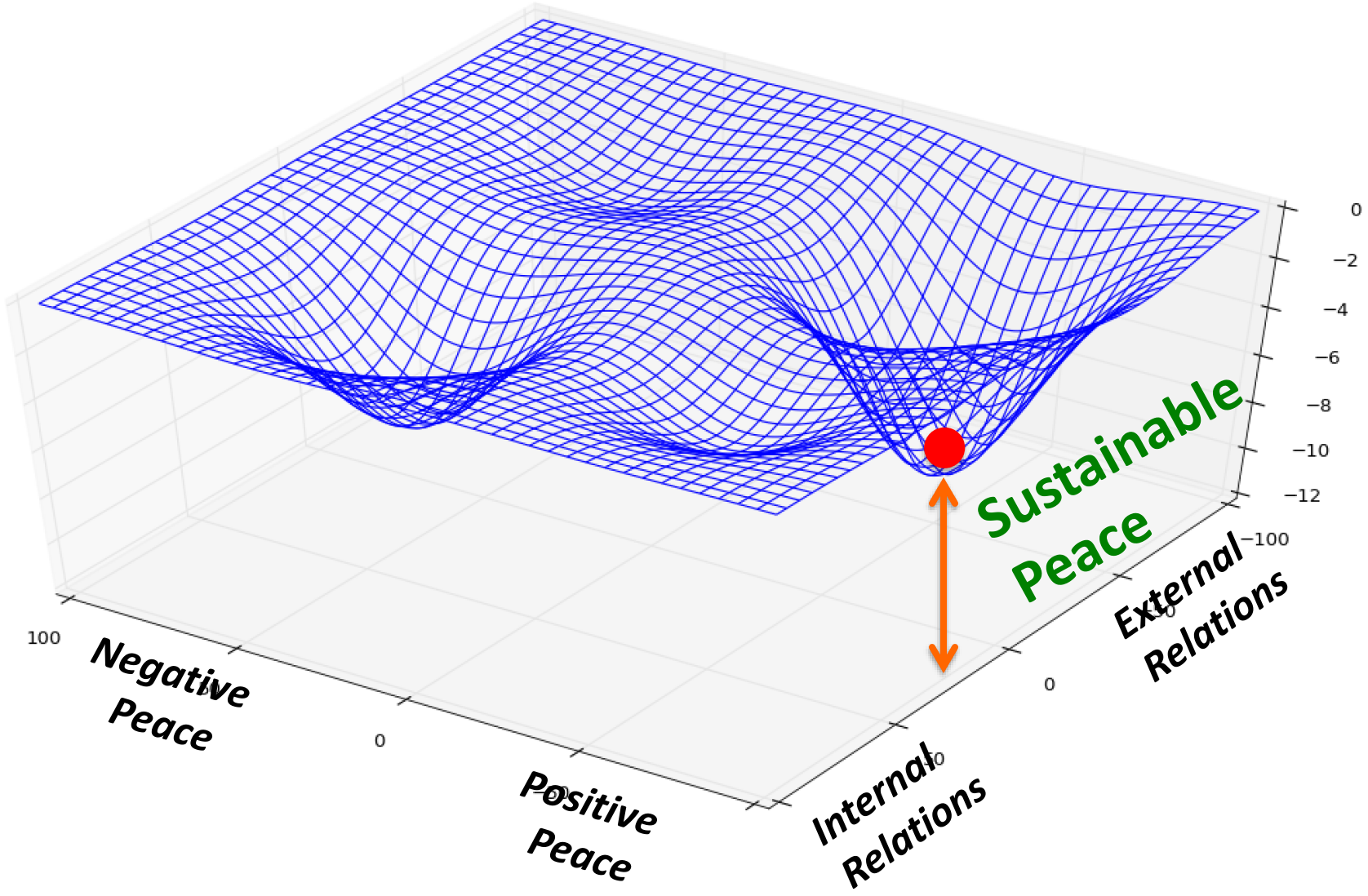
**A Good Outcome.** With the initial conditions $x_i=1$, since everything starts positive, the Positive Historical Reservoir (2/greenyellow) builds, the Negative Historical Reservoir (3/hotpink) decays very fast and stays at zero, and the Nodal variable Ratio of Constructive/Destructive Interactions (1/thick navy blue) grows and stays at a positive value.




**A Bad Outcome.** Here both the Positive and Negative Historical Reservoir start at 1 and all the other variables start at zero. Since the Negative Historical Reservoir (3/hotpink) has a stronger effect and a longer memory than the Positive Historical Reservoir (2/greenyellow), the Negative Historical Reservoir increases in time and drives all the other variables down, including the Nodal variable Ratio of Constructive/Destructive Interactions (1/thick navy blue).



# Visualizing Stable Dynamics For Sustaining Peace



# Five Project Outputs:

- **A more holistic, evidence-based understanding** of the core dynamics of sustainably peaceful societies.
- **A complex** (multi-sector, multi-disciplinary) **set of layered systems visualizations** of the science on SP – **as they relate to the core dynamics**.
- **A structured process of inquiry for global-local dialogues with communities** on the relevance of the science for indigenous peacebuilding.
- **An interactive computer website tool** (based on mathematical model) **that allows for local customization and testing of decisions and policies for SP**.

# Take-Aways

- **Need to study *sustainably peaceful societies* and *peace systems*** in order to further develop the evidence base for promoting sustainable peace.
- Enhance capacities to:
  - Conduct both **conflict analyses *and* peace opportunity assessments** on the ground,
  - Formulate policies that are both **conflict sensitive *and* peace promotive**
  - Collect data on factors both **mitigating destructive conflict *and* promoting positive peace**.

# Take-Aways

- **Commit to integrating complexity and data science models and methods** more centrally into strategic, analytic, policymaking, implementation and impact assessment phases of peacebuilding.
- **Begin with what is working locally to sustain peace** –particularly initiatives lead by women, youth, and other members of traditionally marginalized groups.

# Reflection Questions

- What are the factors that contribute to peaceful societies? How do these findings challenge our traditional ways of understanding and approaching peace building?
- How is peace sustained? How must our thinking, policymaking and programming change in order to sustain peace?
- How might the approach to sustainable peace discussed in this presentation affect the work that you do?

# Please complete this session evaluation NOW!

**Or FAVORITE now and EVALUATE later!**

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