

# Diplomacy 4.0 – Beyond the Digital Frontier

## Module 6: Science Diplomacy



**COMMON  
INTERESTS**

**NATIONAL  
INTERESTS**

## Disclaimer and Copyright

The opinions expressed in this course publication or in any other information resource provided with this material are those of the contributors and do not necessarily reflect the views of the United Nations Institute for Training and Research (UNITAR), any of the other United Nations organs, bodies and agencies, or other organizations.

The designation employed and the presentation of material in this course publication by the contributors or in any other information resource provided with this course publication do not imply the expression of any opinion whatsoever on the part of the United Nations Institute for Training and Research (UNITAR) concerning the legal status of any country, territory, city or area or its authorities, or concerning the delimitation of its frontiers and boundaries.

Material in this course publication may be freely quoted if properly acknowledged. A paper or electronic copy of the publication containing the quotation or reprint should be sent to the United Nations Institute for Training and Research (UNITAR), Palais des Nations, CH-1211 Geneva 10, Switzerland. E-mail: [mdp-elearning@unitar.org](mailto:mdp-elearning@unitar.org)

PROF. PAUL ARTHUR BERKMAN ©  
Associated Fellow, UNITAR  
Fellow, International Science Council  
Faculty Associate, Program on Negotiation at Harvard Law School  
Associate Director of Science Diplomacy, MIT-Harvard Public Disputes Program  
Founder, Science Diplomacy Center™  
Falmouth, Massachusetts, USA

May 1, 2024  
(updated from July 18, 2020)

# TABLE OF CONTENTS

<b>LEARNING OBJECTIVES</b> .....	1
<b>LESSON 1. SCIENCE DIPLOMACY AS AN HOLISTIC PROCESS</b>	
1.1. <u>UNDERSTANDING OUR GLOBALLY-INTERCONNECTED CIVILIZATION</u> .....	2
1.2. <u>OPERATING WITH EXPONENTIAL CHANGE</u> .....	3
1.3. <u>LEARNING LESSONS OF COLD-WAR COOPERATION AMONG THE TWO SUPERPOWERS</u> ...	7
1.4. <u>DEVELOPING WITH INTERNATIONAL AND INTERDISCIPLINARY INCLUSION</u> .....	9
<b>LESSON 2. ENGINE OF SCIENCE DIPLOMACY – INFORMED DECISIONMAKING (THEORY)</b>	
2.1. <u>LIVING IN A TRANSBOUNDARY WORLD</u> .....	14
2.2. <u>SCIENCE AS THE ‘STUDY OF CHANGE’</u> .....	15
2.3. <u>OPERATING ACROSS A ‘CONTINUUM OF URGENCIES’</u> .....	16
<b>LESSON 3. ENGINE OF SCIENCE DIPLOMACY – INFORMED DECISIONMAKING (METHODS)</b>	
3.1. <u>APPLYING PEDAGOGY OF THE SUSTAINABLE DEVELOPMENT GOALS (SDG)</u> .....	20
3.2. <u>RESEARCHING WITH QUESTIONS AND DATA IN VIEW OF SYSTEMS</u> .....	24
3.3. <u>ACTING WITH EVIDENCE AND OPTIONS (WITHOUT ADVOCACY) FOR DECISIONS</u> .....	25
<b>LESSON 4. ENGINE OF SCIENCE DIPLOMACY – INFORMED DECISIONMAKING (SKILLS)</b>	
4.1. <u>TRANSFORMING RESEARCH INTO ACTION</u> .....	27
4.2. <u>ENABLING DIALOGUES AMONG ALLIES AND ADVERSARIES ALIKE</u> .....	28
4.3. <u>ACCELERATING KNOWLEDGE CO-PRODUCTION</u> .....	31
<b>LESSON 5. COMMON-INTEREST BUILDING</b>	
5.1. <u>BALANCING NATIONAL INTERESTS AND COMMON INTERESTS</u> .....	34
5.2. <u>SCIENCE, TECHNOLOGY AND INNOVATION (STI) NETWORKING</u> .....	37
5.3. <u>INFORMED DECISIONMAKING FOR SUSTAINABILITY</u> .....	39

# LISTS OF DISPLAYS

## FIGURES

FIGURE 1:	<a href="#">GLOBALLY-INTERCONNECTED CIVILIZATION</a>	2
FIGURE 2:	<a href="#">COVID-19 PANDEMIC ON MARCH 25, 2020</a>	4
FIGURE 3:	<a href="#">GLOBALLY-INTERCONNECTED CIVILIZATION TIMES SCALES</a>	5
FIGURE 4:	<a href="#">SIGMOID ('S') CURVE WITH EXPONENTIAL CHANGE</a>	6
FIGURE 5:	<a href="#">SCIENCE AS THE KEYSTONE</a>	8
FIGURE 6:	<a href="#">FUNDAMENTAL CHOICE AT THE START OF ANY NEGOTIATION</a>	9
FIGURE 7:	<a href="#">EVOLUTION OF TRANSDISCIPLINARY CAPACITIES</a>	11
FIGURE 8:	<a href="#">EMERGENCE OF "SCIENCE DIPLOMACY"</a>	12
FIGURE 9:	<a href="#">'COIN OF PEACE'</a>	12
FIGURE 10:	<a href="#">SYMBOLIC ACTION OF A SCIENCE DIPLOMAT</a>	13
FIGURE 11:	<a href="#">LAW OF THE SEA ZONES</a>	14
FIGURE 12:	<a href="#">CHANGE PROPAGATES ACROSS TIME AND SPACE</a>	16
FIGURE 13:	<a href="#">THEORY OF INFORMED DECISIONMAKING</a>	17
FIGURE 14:	<a href="#">BALANCING NATIONAL AND COMMON INTERESTS OVER TIME</a>	18
Figure 15:	<a href="#">JURISDICTIONAL SPECTRUM FOR GLOBAL SUSTAINABILITY</a>	21
FIGURE 16:	<a href="#">UNITED NATIONS SUSTAINABLE DEVELOPMENT GOALS (SDG)</a>	21
FIGURE 17:	<a href="#">PYRAMID OF INFORMED DECISIONMAKING</a>	22
FIGURE 18:	<a href="#">DECISION-SUPPORT PROCESS TO GENERATE OPTIONS</a>	25
FIGURE 19:	<a href="#">LESSONS WITH SCIENCE DIPLOMACY</a>	29
Figure 20:	<a href="#">KNOWLEDGE CO-PRODUCTION WITH HOLISTIC DIALOGUES</a>	31
FIGURE 21:	<a href="#">TRIANGULATION WITH LIFELONG LEARNING</a>	32
Figure 22:	<a href="#">BALANCING NATIONAL AND COMMON INTERESTS OVER SPACE</a>	36
FIGURE 23:	<a href="#">INFORMATION AND COMMUNICATION ERAS</a>	39
FIGURE 24:	<a href="#">NEGOTIATION STRATEGIES ACROSS A 'CONTINUUM OF URGENCIES'</a>	40
FIGURE 25:	<a href="#">INFORMED DECISIONMAKING FOR SUSTAINABILITY WITH GLOBAL INCLUSION</a>	41
FIGURE 26:	<a href="#">GLOBAL INDIGENOUS YOUTH SUMMIT ON CLIMATE CHANGE (GIYSCC)</a>	42

## TABLES

TABLE 1:	<a href="#">ATTRIBUTES AND GLOBAL-LOCAL CHARACTERISTICS OF SUSTAINABILITY</a>	24
TABLE 2:	<a href="#">CATEGORIES OF QUESTIONS WITH SCIENCE DIPLOMACY</a>	27
TABLE 3:	<a href="#">AREAS BEYOND NATIONAL JURISDICTION (ABNJ)</a>	23

## BOXES

Box 1:	<a href="#">SCIENCE DIPLOMACY: OPERATIONAL CHARACTERISTICS AND CONTRIBUTIONS</a>	7
Box 2:	<a href="#">COMMON-INTEREST BUILDING: TRAINING GAME</a>	22

## VIDEOS

VIDEO 1:	<a href="#">HUMAN POPULATION THROUGH TIME</a>	3
VIDEO 2:	<a href="#">EXPONENTIAL GROWTH AND PANDEMICS</a>	3
VIDEO 3:	<a href="#">ANTARCTIC TREATY SUMMIT (2009) – MINI-DOCUMENTARY FOR HUMANITY</a>	10

## LEARNING OBJECTIVES

This concluding module in the United Nations DIPLOMACY 4.0 - BEYOND THE DIGITAL FRONTIER e-learning course will introduce **science diplomacy** as an *international, interdisciplinary and inclusive (holistic) process, involving informed decisionmaking to balance national interests and common interests for the benefit of all on Earth across generations*. This module will enhance the capacity of participants *across a 'continuum of urgencies'* to produce **informed decisions** that extend from security to sustainability time scales for nations, peoples and our world. Informed decisionmaking skills, methods and theory will be introduced with **science** as the *'study of change'* to be **inclusive** (*who, what, when, where, why and how*) across the natural sciences, social sciences and Indigenous knowledge. The diplomacy of **options** (*without advocacy*), *which can be used or ignored explicitly*, will be shared to deliver informed decisions as the apex goal – not good decisions or bad decisions, right decisions or wrong decisions – but decisions that optimize available knowledge with scalability at personal-planetary levels. After successful completion of this module, participants should be able to:

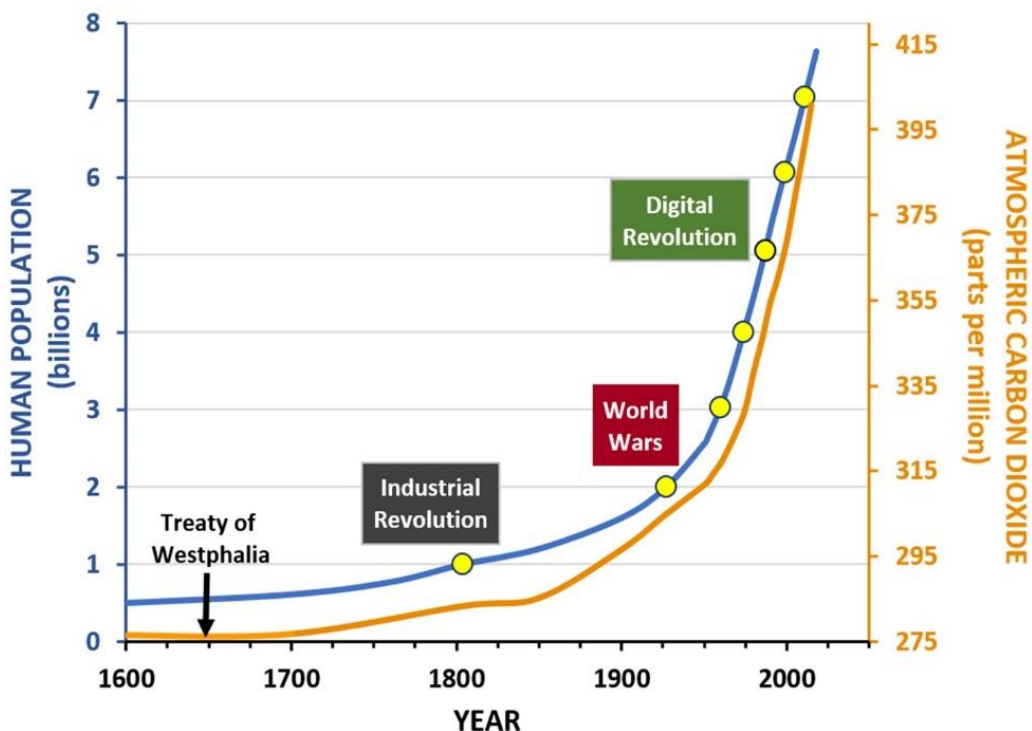
- ❖ Understand the context of our globally-interconnected civilization across the 21<sup>st</sup> century, especially in view of 'exponential change' over diverse time scales;
  - ❖ Contrast informed and un-informed decisions from diverse perspectives, operating across a 'continuum of urgencies' short-to-long-term, with special consideration before-through-after inflection points, as we all observed with the COVID-19 pandemic;
  - ❖ Apply common-interest building as an essential negotiation strategy – in balance with negotiation strategies that emphasize conflict resolution – starting with questions to promote cooperation and prevent conflict (two sides of the 'coin of peace'); and
  - ❖ Contribute as a **science diplomat** with skills as an observer and participant across the data-evidence interface to produce informed decisions – brokering dialogues among allies and adversaries alike with transdisciplinary inclusion across the spectrum of subnational-national-international jurisdictions.
-

# LESSON 1

## Science Diplomacy as an Holistic Process

### 1.1 UNDERSTANDING OUR GLOBALLY-INTERCONNECTED CIVILIZATION

The unambiguous reality of human civilization is that we are now globally-interconnected (Figure 1). This fact is revealed simply by the two ‘world wars’, which happened for the first time in the history of humankind only in the last century. For perspective, the oldest continuous annual calendars still in use record nearly 6000 years – with the past few centuries like years in a lifespan of sixty centuries – demonstrating without ambiguity that we are still in our infancy as a globally-interconnected civilization (Video 1). Moreover, timing of global increases in atmospheric carbon over the past few centuries coincide with **accelerating increase in global human-population size**, which is orders of magnitude larger today than at the dawn of the nation-state with the *Treaty of Westphalia* in 1648.



**FIGURE 1: GLOBALLY-INTERCONNECTED CIVILIZATION<sup>1</sup>** across **Science, Technology and Innovation (STI)** eras – viewed on a planetary scale with our human population<sup>2</sup> multiplying by billions (yellow dots on blue line) and increasing concentrations of carbon dioxide in the atmosphere<sup>3</sup> (gold line), recognizing that ‘correlation alone does not mean causation’. STI is action-oriented, complementing the research and education with Science, Technology, Engineering and Mathematics (STEM).

<sup>1</sup> Adapted from P.A. Berkman, O.R. Young and A.N. Vylegzhanin, *Preface for the Book Series on INFORMED DECISIONMAKING FOR SUSTAINABILITY*. IN: Young, O.R., Berkman, P.A. and Vylegzhanin (eds.). VOLUME 1. GOVERNING ARCTIC SEAS: REGIONAL LESSONS FROM THE BERING STRAIT AND BARENTS SEA. (Springer 2020).

<sup>2</sup> J. D. Durand, *Historical Estimates of World Population: An Evaluation*, 3(3) Population and Development, 253-296 (1977); Worldometer, Data on the size of the human population on Earth from 1600 to the present, <http://www.worldometers.info/world-population/#table-historical>, with compilations by United Nations compilations (<https://www.un.org/development/desa/pd/content/population-division>) since 1950.

<sup>3</sup> USEPA, *Global Atmospheric Carbon Dioxide Concentration Data*. United States Environmental Protection Agency (2018), [https://www.epa.gov/sites/production/files/2016-08/ghg-concentrations\\_fig-1.csv](https://www.epa.gov/sites/production/files/2016-08/ghg-concentrations_fig-1.csv).