

The Coordinates of Cyber International Relations

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Explorations in Cyber International Relations

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Problem

As the Internet and International Relations become increasingly interwoven, the properties of information goods such as information security, control, or freedom, or those of international activities such as trade, or diplomacy must be framed in the context of emergent behaviors of a system where the Cyberspace interacts with traditional IR. *The purpose of this research is to create a foundation for such understanding by conceptualizing the hitherto separate domains of Cyberspace and International Relations into an integrated system, to analyze the fundamental interdependencies between the two domains, using methods from systems analysis.*

Methods

Step 1: Identify important actors in Internet and International Relations

Step 2: Identify core functions performed by the actors.

Step 3: Identify interdependencies among core functions.

Step 4: Code and Analyze the Structure of Interdependencies

- Qualitative Matrix
- Binary Matrix
- Logical Matrix

The Research

Internet Actor	Abbreviation	Core Function	
Equipment Providers	EQ: Dev	Design and Develop Network Equipment	
	EQ: Survive	Generate funds to survive	
	ISPs	ISP: ConnInd	Connect with Individuals, Businesses, and Platforms
		ISP: ConnLoc	Connect with domestic ISPs
		ISP: ConnInt	Connect with the International backbone ISPs
		ISP: Service	Provide Internet service
		ISP: Secure	Secure links and servers
ISP: DevCap	Develop capacity to meet demand		
ISP: Survive	Generate funds to survive		
Information/ Communications/ Applications Platforms	PLAT: GenCont	Generate content	
	PLAT: StoreCont	Store content	
	PLAT: ProvideAcc	Provide access to content	
	PLAT: ProvideComm	Provide communications platform	
	PLAT: DistApp	Distribute Applications	
	PLAT: SecureCont	Secure Content	
Device Makers	DEV: Dev	Design and develop end devices for communications	
	DEV: Survive	Generate funds to survive	
	Application Providers	APP: Dev	Design and Develop Internet Applications
APP: Survive		Generate funds to survive	
Individuals	IND: AccCont	Access Content	
	IND: GenCont	Generate Content	
	IND: ShrCont	Share Content	
	IND: DevIntApp	Develop Internet Applications	
	IND: Secure	Secure Links/Content	
IND: Invest	Invest in Internet Technologies		
International Relations Actor	Abbreviation	Core Functions	
State	STA: GrEq	Grant private equipment providers	
	STA: GrISP	Grant private ISPs	
	STA: GrPlat	Grant grant Information/Communications Applications Platform	
	STA: GrDev	Grant private device makers	
	STA: GrApp	Grant private application providers	
	STA: OwnEq	Own and operate network equipment manufacturing	
	STA: OwnISP	Own and operate ISP functions	
	STA: OwnPlat	Own and operate Information/Communications/Applications Platforms	
	STA: OwnDEV	Own and operate device manufacturing and maintenance	
	STA: OwnAPP	Own and operate application development	
	STA: ImportHwSw	Import hardware/software products	
	STA: ExportHwSw	Export hardware/software products	
	STA: CensorCont	Censor content	
	STA: FiltrCont	Filter content	
	STA: PhySecure	Physically secure Internet access, services, and information flows	
IEEE	STA: Survive	Generate funds to survive	
	IEEE: DevStd	Develop Hardware Standards	
	IEEE: CoordStd	Coordinate Hardware Standards	
IETF	IEEE: Survive	Generate funds to survive	
	IETF: ProdIntStd	Produce Internet Standards	
ICANN	IETF: Survive	Generate funds to survive	
	ICANN: CoordIntAdd	Coordinate Internet Addresses	
W3C	ICANN: CoordDNS	Coordinate the DNS	
	ICANN: Survive	Generate funds to survive	
NANOG	W3C: DevWebStd	Develop Web Standards	
	W3C: Survive	Generate funds to survive	
	NANOG: IntOpGr	Identify and Solve Problems of Internet Operations and Growth	

Preliminary Results

Matrix of Interdependencies in Cyber International Systems

Interdependencies among Internet actors/functions

- Technological dependencies run from upper onto lower Internet layers (e.g., service), but not always (e.g., security)
- Economic dependencies run from lower onto upper Internet layers
- Interdependencies are denser among platforms, end-devices, applications, and individual level production

Interdependencies at the seams (Internet on IR)

- Provisioning of technological functions of the Internet (e.g., equipment, service, devices, applications) depend upon State's permission for private provisioning, or its public provisioning.
- All technological functions could depend upon imports
- All economic functions could depend upon state subsidies
- Information access depends upon State's censorship and content filtering.
- Many technical functions depend upon standards organizations

Interdependencies at the seams (IR on Internet)

- State's decision to provision Internet functions privately depends upon the ability of Internet actors to make profits
- State's censoring and filtering capability depends on actors at all Internet layers
- State's security is dependent on security at all Internet layers
- Import depends upon demand and export upon the production of Internet functions
- Standards organizations depend upon Internet actors for standard creation as well as economic viability.

Interdependencies among IR actors/functions

- Public provisioning of Internet functions depends upon viability of the State, where import/export plays a role.
- The State depends upon standards organizations (e.g. IETF) for censoring and filtering capability.
- Standards organization depend upon State for coordinating standards (e.g., IEEE's coordination of hardware standards)
- Internet and web standards have several interdependencies among themselves (i.e., core functions of IETF, ICANN, W3C, and NOGs)

How many depend on it?

How many it depends on?

of core functions dependent on this core function

of core functions this core function depends upon

Thank You!

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