

Creating a ‘Mosaic Effect’: Digital Revolutions, Emerging Powers, and Global Rulemaking for 5G

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This is a time of disruptive innovation – an era where the pace of technological change is increasing at an unprecedented rate that we have never experienced before. Over the past few years, the digital revolution has been profoundly transforming the way businesses operate, making it imperative for nation-states to promptly adapt their strategies in order to seize emerging opportunities for economic growth and social development. Moreover, globally accepted technology rules have begun shaping the future of critical and emerging technologies, which set the stage for strategic competition for the leading position in the global political economy. How are these rules set in the international arena? How do countries interact, innovate, and compete in international technology rulemaking, like in 5G, that is pivotal to the nation's competitiveness?

In this short discussion paper, I argue that in order to identify and understand states’ responses to the digital revolution, one must first demystify how structural conditions for global technology rulemaking have impacted nations-states to perform as rule-makers of the new digital game, particularly those emerging powers like China and South Korea. By focusing on the study of 3GPP The 3rd Generation Partnership Project, the focal organization for the global 5G standard development, I contend that the transnational rulemaking procedure for the global 5G regime now underscores a decentralized and compartmentalized nature. As an outcome of this fundamental change in global technology governance, emerging powers can now gain access to shaping the rules of the game, on global 5G, through a mechanism called '*the mosaic effect*.' First, '*the mosaic effect*' leads to the pluralization of those who make rules: decentralization allows businesses worldwide to insert their influence over a selection of concrete standards and, thus, create multiple entry points for emerging and other developing economies. Second, the '*mosaic effect*' also leads to the pluralization of **how to make rules**: compartmentalization further enables firms to appropriate their distinct preferences and capabilities in domestic standards networks in writing global rules.

Global 5G Rulemaking: Towards decentralization and compartmentalization

These conditions spurred a transformative re-organization of institutions in the transnational rulemaking for emerging technologies. This is most strongly evidenced in 3GPP, the focal international standard regulator for 5G.

3GPP's governance structure and decision-making procedures now operate in a highly decentralized and compartmentalized manner:

- No executive board is set in this organization for executive decision-making and oversight of the institution;
- Multiple Technical Specification Groups (TSGs) and Working Groups (WGs) are themselves devolved rulemaking authorities, preparing, approving, and maintaining standards documents in charge of their own area of expertise;
- And each TSG/WG also gathers a small, distinct group of actors that own a particular set of knowledge and thus have interests in influencing the standard in question. Standard competition within these specialized technical groups—which usually occurred between one country including their national firms and another—has shifted to the contestation between different networks of firms.

I employ the concept of *the mosaic effect* to capture the creative process through which firms—with non-state actors—insert themselves into this transnational private governance scheme. First, with the decentralized rulemaking procedure, highly specialized private actors can now influence the governance of the global 5G regime by participating in a concrete set of standard development rather than working on a single overarching regulatory framework that covers comprehensive issues at once. Second, compartmentalization in decision-making has also allowed these actors to build their own network of collaboration and coalition for a particular standard; the geography and ecology of these networks often vary significantly across different compartmentalized issue areas. This opens up a great deal of freedom for businesses from different countries to experiment with their own strategies, and still achieve success, to advance their own regulatory agenda in the international arena.

The mosaic Effect: A pluralization of global rule-makers for 5G

The decentralized and fragmented institutional structure of 3GPP, therefore, has significant implications for countries in the world, especially emerging powers. With the fragmentation of transnational technology rulemaking, the past strategy of expecting states and their business actors to acquire all-encompassing capabilities is no longer needed, as they can now propose and enforce an alternative set of comprehensive rules. A more plausible and accessible strategy for emerging economies—who often lack the all-encompassing technological power to propose an alternative

vision of the world order—would be to develop their own unique technological strength and formulate rules in respective specialized areas. Additionally, the absence of a hierarchical governance structure in 3GPP has further enhanced equitable access for individual companies 'from advanced and emerging economies to decision-making.

In the current international technology regime, a group of competitive players from a few emerging technology markets, particularly those from China and South Korea, have pioneered many new regulatory experiments. Thus far, they have become surprisingly successful in acquiring substantial authority to set international technology regulations. This provides a critical window into the evolving role of these conventional catchups in shaping new rules of globalization. The growing pluralization of global rule makers for 5G also suggests a gradual erosion of the remarkable preponderance of the West in the world's most recognizable digital battlefield in the current global political economy.

The Mosaic Effect: A pluralization of rule-making models for global 5G

Surprisingly, these emerging powers have come to share persuasive authority with advanced economies in setting the rules for 5G. Their achievements in 3GPP have also further shown innovations of different strategies, which carves out a pluralization of feasible models in creating international technology regulations. The difference is most clearly demonstrated in the coalition network, as they have built across the global standards community. Tech firms from China in 3GPP have developed a high degree of national cohesiveness in the rulemaking process: their strategy features dense coordination with domestic allies and moderate cooperation with a select number of international standard players. When proposing and developing new 5G proposals in the organization, Huawei frequently collaborates with select national flagships such as China Mobile, China Telecom, China Unicom, and other private actors like ZTE and Xiaomi. On the contrary, firms from South Korea, opt for a more open and internationalized approach than their Chinese counterparts. Compared to Huawei, South Korean tech giant Samsung prefers the formation of cross-border coordination in developing global 5G standards.

Conclusion

Against the backdrop of the rising techno-nationalism worldwide aiming to strengthen their 5G-driven advantages, this study challenges the notion that global technology rulemaking is primarily a competition between state-led political campaigns. Instead, rulemaking in the global technology sphere is also influenced by national firms—in particular, firms from latecomer economies who can navigate and influence compartmentalized and decentralized rulemaking for transnational

technology. These findings, I argue, call for further analyses of the typology of states' responses to disruptive technology governance and the dynamics of state-business relations in the digital revolution.

