

## IMMIGRANT ENTREPRENEURSHIP: A PROCESS ILLUSTRATING CONSTRUCTAL LAW

Helene CARA CHESTER

Trident University International, Glenn R. Jones College of Business, CA, USA  
E-mail: mim.cara30@yahoo.com

**Abstract.** The unstoppable growth of immigrant entrepreneurship (IE) increased immigrant entrepreneurs' (IEs) mobility and need to create a more rapid flow of expansion. Recent interviews with Chinese IEs unveiled a network of global ethnic channels (*guanxi*) sustaining their entrepreneurial activities. Despite controversy and critique of some negative aspects of *guanxi*, scholars concluded that *guanxi* are the main factor in IEs global success. The striking resemblance between *guanxi* and the *constructal design* in the *constructal law* started in 2014 our research about the *constructal theory* as the scientific explanation of *guanxi*. Our presentation at CLC Parma explored for the first time the connection between the IEs channels and the constructal law (CL). As we went deeper into a more holistic evaluation of IE, we discovered more striking similarities between the CL and IE approached as a *process*, with *time* being of the essence (e.g., the S curve, the evolutionary flow, morphing, etc.). The fact-based investigation revealed that *in time, as a process*, IEs' global IEO extend like branches of a tree going from IEs country (where they were born and raised) to their adopted country (where they now live and work). In sum, this paper explores for the first time the connection between two revolutionary modern concepts: IE as a process and the constructal law (CL). In opening new doors – i.e. proposing to link IE to the CL, and a process-oriented method rather than the variance oriented – the impact of this research could be substantial.

**Key words:** Constructal Law, Process, Immigrant entrepreneurship, Immigrant entrepreneurs, Guanxi.

### 1. IMMIGRANT ENTREPRENEURS (IES)

The major contribution of immigrant entrepreneurs for the global economy is recognized by policy makers and experts, and is also reflected in the growing research on this topic. Today, statistic reports show that IE generates \$1 trillion per year, and only in the US more than 40 percent of the 2010 Fortune 500 companies were founded by immigrants or their children (cf. Partnership for a New American Economy, 2011).

Rapidly growing successful businesses of IEs became global immigrant entrepreneurial organizations (IEO). Increased globalization transformed IEs and their organizations (IEO) in major global players [1–7]. Figure 1 illustrates IEs speeding over the borders, and Fig. 2 shows similar natural design flow (i.e., CL design) in rivers and our lungs. CL design in Fig. 2 unites the *animated* realm with the *inanimated* in a splendid global harmony. IEs are important players in global business linking global enterprises and the homeland nations. Scholars agree that IEO are frontrunners in the ongoing global business Marathon [1–7], yet there is limited research about these global successful organizations [2–4, 5–7, 14]. Market changes demand updated exploration of the growing field of IE [14, 8–15].



Fig. 1 – IEs build bridges over global economy.

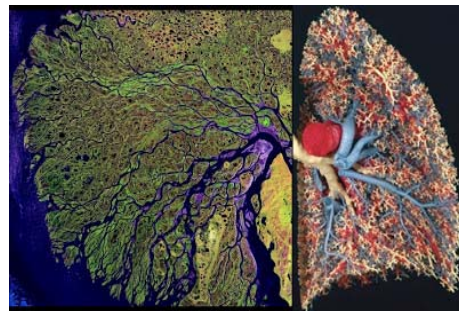


Fig. 2 – CL design in Lena delta (L) & human lungs (R).

This study is focusing on a process-oriented research, explaining *IE as a process* rather than *a one-time act of creativity* (product, service, new concept). Thus, the paper brings a holistic view of the IE as a multi-level *process*, considering *time* as a salient factor influencing this process. This study also explains how IE illustrates the Constructal Law (CL) as a natural design phenomenon through a network of channels called *guanxi*.

## 2. GLOBAL FLOW OF GUANXI

Multiple interviews with successful Chinese IEs unveiled a network of global channels (*guanxi*) sustaining their entrepreneurial activities [3–4], [7–8]. Despite the critique of negative aspects of *guanxi*, scholars concluded that *guanxi* are the main factor in IEO's rapid global success [1, 3, 5–7, 12–15]. *Guanxi* – an old Confucian concept preserved as a main philosophy in Chinese society – is functioning today in China as a personalized *network of influence* based on trust, friendship, loyalty, respect, and mutual favors [7, 8, 14].

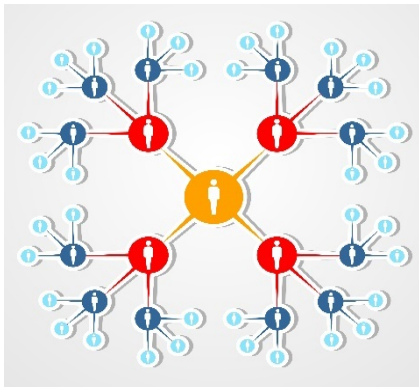


Fig. 3 – Flow of GN illustrates CL design (Google CL).



Fig. 4 – CL hierarchy design (Web guanxi).

The global collaboration of IE is represented by the *guanxi* network (GN), a top professional networking group for IE in Asian Pacific area, is producing spectacular events (Linkedin GN). The complexity and diversity of *guanxi* channels, their free morphing determined scholars to consider IE more of a *process* than a one-time act.

## 3. GUANXI & THE CONSTRUCTAL LAW (CL)

The striking resemblance between *guanxi* and the *constructal design* (Figs. 3, 4) started in 2014 our research about the CL as a scientific explanation of *guanxi*. The fact-based investigation revealed that *guanxi* are extending like branches of a tree going from immigrant entrepreneurs' country (where IE were born and raised) to their adopted country (where IE now live and work). Today, *guanxi* are constantly morphing and expanding in new countries, where other IE – sharing the same culture and language – conduct business. The morphing flow of *guanxi* includes diverse people, from suppliers and distributors to bankers and partners. Although past research praised *guanxi* as unique marketing, provided no explanation of being based on a *scientific* concept [7–9, 14–15].

Our 2015 Parma presentation explained *for the first time the connection* between the *guanxi* network and the *constructal law* [14]. Increased interest of scientific community in the CL produced studies demonstrating that the flow of *guanxi* is real, that the process of IE is illustrating the CL evolutionary flow, and that the *successful outcomes are based on science* rather than on ingenuity [14, 17, 21, 25–27].

## 4. ENTREPRENEURIAL JOURNEY: IE AS A PROCESS

A new venture is the integration of information in the old system, by an individual or an organization [7–12]. Past research is rich in exploring the *novelty* of creation of new ventures, and the unique, exceptional qualities of entrepreneurs [3–9, 17], and what differentiate entrepreneurs from small business owners:

creativity, reject of status-quo, innovation, dealing with risk and uncertainty [2–7]. However, only a few recent studies started asking questions about what happens *afterwards*, when the startup develops quickly into a global organization, when a factor called *time* begins to play a salient role in the *development* of venture [8–10].

Our study explores the influence of *time* on IE, and demonstrates that entrepreneurship is a long, complex *process* rather than a one-time act [25]. In today’s shifting global economy, IE became a complex process, in a sequence of events, initially triggered by IEs desire for profit. In time, the *desire for profit* interacts with coming information, and based on presence of other factors (*motive, means, and opportunity*), a new *idea* emerges. Based on the same factors (motive, means, opportunity), the *idea* becomes a *product*, which product in turn, if conditions permit, can generate a *positive cash flow* [25]. Figure 5 illustrates IE as a process.



Fig. 5 – IE as a process: from desire for profit to goal, to idea, to product, to positive cash flow (adapted from McMullen & Dimov 2013).

The *sequence* of events in IE process is important for IE’s process-oriented research--not only because it illustrates similar design as in the CL – but also because it is an essential element for a complete, holistic, systemic demonstration [25, 21–30]. Table1 summarizes this systemic process [25].

Table 1

IE – A horizontal systemic process supported by the CL

IE: Variance vs. Process, the latter supported by the CL (IE as a process)	Variance-oriented: fixed in- time relationship between partitioned variables	Process-oriented: the sequence of events in time brings a holistic view to IE process
--	--	---

### 5. IE: A HORIZONTAL SYSTEMIC PROCESS

The *process* approach to entrepreneurship research may *reveal predictable* patterns and events that variance-oriented studies would otherwise miss. Few studies traced this journey from start to finish, making existing empirical research limited and merely dated [25, 36–37]. The IE multi-level process is a horizontal research *unlike* the *vertically* oriented *variance* research which is separating *creativity* from *strategy* [25]. In sum, our findings show an *interdependent* relationship between diverse, separate actions, which warrants further investigation, offering a framework for further empirical studies [25, 8, 21, 25, 31].

### 6. THE CONSTRUCTAL LAW (CL)

*Constructal* is a word coined by professor Adrian Bejan (1996), when he described that everything around us is a flow system [11], and all these “flow systems evolve over time, being connected to and shaped by other systems in a global tapestry of flow” [12]. Bejan’s CL is based on a fundamental principle of physics about the evolution of flow systems as they *change their design over time* to increase flow access (in the IE field this increasing flow translates in success, i.e. a positive outcome).

Bejan & Lorente (2011) claim that CL is about the fact that “design in nature is not static: it is dynamic, ever changing, like the images in a movie at the cinema. This is what design and evolution are in nature, and the constructal law captures them completely.” [44, p. 211]. The authors argue that branching tree-shaped flow patterns that govern the design of everything that moves in nature, *animate or inanimate*—“generate *in time* shapes that facilitate this movement” [12]. Examples of treelike architectural design are: plants and tree roots, leaves, river basins, our cardiovascular system, human lungs, the corporate structure,

politics, and lastly, the IE process. In sum, *based on physics*, the CL unites for the first time in *oneness* the *animate* with the *inanimate* realm [14–21, 23–24].

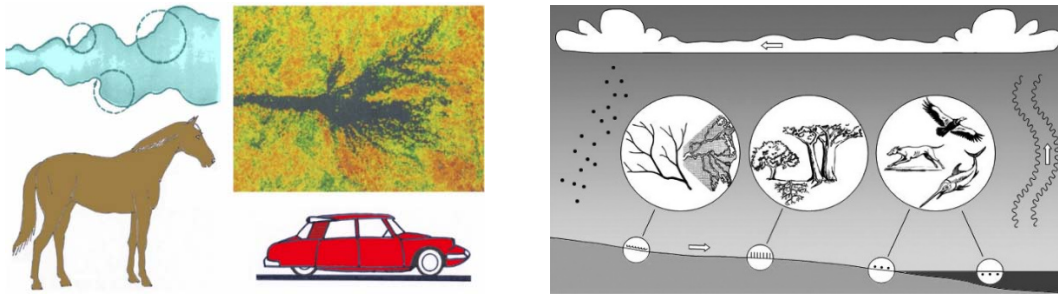


Fig. 6 – CL unites everything, L to R: the water circuit, deltas, animal movements (swim, run, fly), machines, wind, trees (Bejan *et al.* 2008).

Recent scientific studies demonstrate that the CL governs the phenomena of *design* and *evolution* in many diverse areas: medicine, biology, social sciences, distribution of wealth [21], politics, architecture, sports, arts, economy, academics, business, technology, IE as a *process* [8-12, 14, 16–25].

## 7. THE ‘S’ CURVE

As our study progressed, aspects of the resemblance between the CL and IE reached a deeper level of investigation. The findings showed that EI illustrates diverse CL manifestations e.g. the “S” curve (Fig. 7).

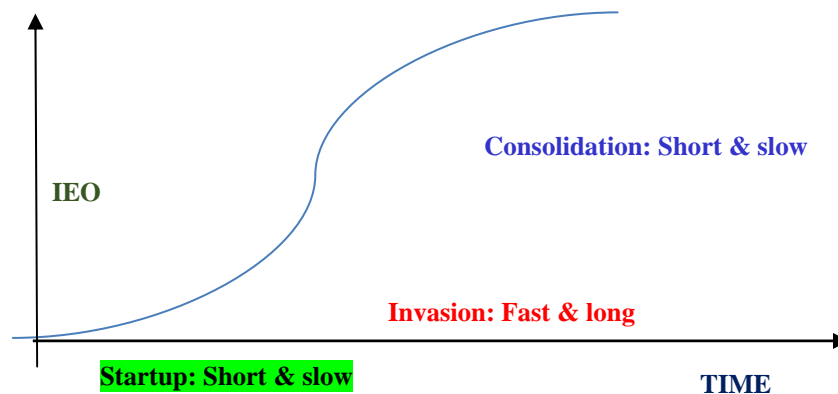


Fig. 7 – The ‘S Curve’ demonstrates IE as a Process (Adapted from Mc Mullen & Dimov, 2013).

The *curve shape design* in the CL (Fig. 7) was clearly noticed and widely accepted by scientists in the evolutionary flow of IEO: *slow and short* at the start, then *fast and long* – *invasion*, followed finally by another *slow and short* in the end – *consolidation* [21, 23–25, 33–37]. Another aspect of similarity between CL & IE is the Golden Ratio design, evident in existing studies as *form follows flow* [26].

## 8. GOLDEN RATIO & HIERARCHY

GR is an old concept that unites arts and science through aesthetic beauty norms. Recognized as an expression of perfection – the GR is related to numbers, proportions, and repeating patterns of fractal geometry [14–17]. The CL design shows nature generating spatial fractal geometry. Based on the CL complementing the golden ratio, studies argue that both CL and the IE process flow *are aligned with GR* [21 – 27].

Among the most interesting demonstrations based on CL is the natural design of hierarchy (few large and many small) that unifies river basins and rivulets, politics, social science and distribution of wealth [21, 24]. CL hierarchy is created out of necessity – the large (river basins or well-doing people), and small (rivulets or poor people left behind) need each other for evolving and morphing together [24].

## 9. CONCLUSION

Our presentation links for the first time two revolutionary concepts: the CL [11–14, 17–24], and IE as a multi-level process [25, 32–33]. Entrepreneurship researchers have long called for a process-oriented approach. The approach of IE as a process with sequential events explanation is an important predictability tool, bringing a holistic view of this multi-level process [25, 33]. Regardless of salient pragmatic implications for IEO, the switch from ‘act’ to ‘journey’ for sure helps advance scholarly understanding of IE phenomenon, a transformational process in which time cannot be ignored [25, 33]. In opening new doors and asking new questions, the impact of this research might prove to be substantial.

## REFERENCES

1. MUSTAFA, M., CHEN, S., *The strength of family networks in transnational immigrant entrepreneurship*, Thunderbird International Business Review, **52**, 2, pp. 97–106, 2010.
2. ACS, Z., AUDRETSCH, D., BRAUNERHJELM, P., CARLSSON, B., *Growth and entrepreneurship*, Small Biz. Econ., **39**, 2, pp. 289–300, 2012.
3. XIE, Y., AMINE, L.S., *Social networks and the internationalization of Chinese entrepreneurs*, Global Business & Organizational Excellence, **29**, 1, pp. 61–78, 2009.
4. IYER, G.R., & SHAPIRO, J.M., *Ethnic entrepreneurial and marketing systems*, Journal of International Marketing, **7**, 4, pp. 83–110, 1999.
5. ZOLIN, R., SCHLOSSER, F., *Characteristics of immigrant entrepreneurs*, Thunderbird International, **55**, 3, pp. 271–284, 2013.
6. KLOOSTERMAN, R., RATH, J., *Entrepreneurship among migrants and returnees*, J. of Ethnic and Migration Studies, **27**, 2, 2001.
7. BASU, A., *From 'break out' to 'breakthrough': Immigrant entrepreneurs in UK*, Intl. J. of Entrepreneurship, pp. 151–123, 2011.
8. ASSUDANI, R.H., *Ethnic entrepreneurship: The distinct role of ties*, J. of Small Business, **22**, 2, pp. 197–205, 2009.
9. LING, H., *New sources and perspectives on southern Chinese emigration*, Frontiers of History in China, **6**, 3, pp. 370–406, 2011.
10. BRZOZOWSKI, J., CUCCULELLI, M., SURDEJ, A., *Transnational ties and performance of immigrant entrepreneurs: the role of home-country conditions*, Entrepreneurship & Regional Development, **26**, 7/8, pp. 546–573, 2014.
11. KARIV, D., MENZIES, T.V., BRENNER, G.A., FILION, L., *Transnational networking and business performance: Ethnic entrepreneurs in Canada*, Entrepreneurship & Regional Development, **21**, 3, pp. 239–264, 2009.
12. WEIDENBAUM, M.L., *The bamboo network*, Martin Kessler Books, Free Press. p. 23–28, 1996
13. LIU, A.H., GAO, H., *Examining relational risk typologies for guanxi boundary spanners*, Journal of Marketing Theory & Practice, **22**, 3, pp. 271–284, 2014.
14. CARA CHESTER, H., *Global channels of successful immigrant entrepreneurs illustrate the constructal law*, Intl. J. of Heat and Technology, **34**, 1, S, pp. 29–36, 2016.
15. AI, J., *Guanxi networks in China: Importance and future trends*, China & World Economy, **14**, 5, pp. 105–118, 2006.
16. BEJAN, A., *Advanced Engineering Thermodynamics*, 2<sup>nd</sup> ed., New York, Wiley, 1997.
17. BEJAN, A., ZANE, P.J., *Design in nature: How the constructal law governs evolution in biology, physics, technology, and social organizations*, New York, Doubleday a division of Random House, 2012.
18. BEJAN, A., *The constructal law origin of the wheel, size, and skeleton in animal design*, American J. of Physics, **78**, 7, pp. 692–699, 2010.
19. BEJAN, A., LORENTE, S., *Constructal law of design and evolution: Physics, biology, technology, and society*, J. of Applied Physics, **1**, 13, pp. 151–301, 2013.
20. BEJAN, A., *The constructal law of “designness” in nature*, AIP Conference Proceedings, **1033**, 1, pp. 207–212, 2008.
21. BEJAN, A., *The Physics of Life: The Evolution of Everything*, New York, St. Martin’s Press, 2016.
22. REIS, A.H. *Design in nature and the laws of physics*, Phys Life Rev., **8**, pp. 255–256, 2011.
23. BEJAN, A., LORENTE, S., *The constructal law origin of the logistics S curve*, J. of Applied Physics, **110**, 2, 2011.
24. LORENTE, S. BEJAN, A., *Few large and many small: Hierarchy in movement on earth*, Intl. J. of Design & Nature and Ecodynamics, **5**, 3, pp. 1–14, 2010.
25. MCMULLEN, J. S., DIMOV, D., *Time and the Entrepreneurial Journey: The Problems and Promise of Studying Entrepreneurship as a Process*, J. of Management Studies, **50**, 8, pp. 1481–1512, 2013.
26. JASKIEWICZ, P., COMBS, J.G., KETCHEN, D.J. Jr., IRELAND, R.D., *Enduring entrepreneurship: antecedents, triggering mechanisms, outcomes*, Strategic Entrepreneurship Journal, **10**, pp. 337–345, 2016.

27. GOMPERS, P., KOVNER, A., LERNER, J., *Performance persistence in entrepreneurship*, J. of Financial Economics, **96**, 1, 2010.
28. ARORA, V.K., *Dynamic entrepreneurship in static pipeline*, Asia Pacific Journal of Management, **2**, 1, 2013.
29. GORDON, I.D., *Design in nature: How the constructal law governs evolution*, Library Journal, **137**, 3, pp. 123–124, 2012.
30. BEJAN, A., LORENTE, S., *The constructal law and thermodynamics of flow systems with configuration*, Intl. J. of Heat and Mass Transfer, **47**, pp. 3203–3214, 2004.
31. VAN DE VEN, A. H., ENGLEMAN, R.M., *Event- and outcome-driven explanations of entrepreneurship*, J. of Business Venturing, **19**, pp. 343–58, 2004.
32. RASMUSSEN, E., MOSEY, S., WRIGHT, M., *The evolution of entrepreneurial competencies: a longitudinal study of university spin-off venture emergence*, J. of Management Studies, **48**, pp. 1314–1345, 2011.
33. PRASHANTHAM, S., DHANARAJ, C., *The dynamic influence of social capital on the international growth of new ventures*, J. of Management Studies, **47**, 6, pp. 967–994, 2010.
34. GARTNER, W.B., *What are we talking about when we talk about entrepreneurship?*, J. of Business Venturing, **5**, pp. 15–28, 1990.
35. GUPTA, V.K., CHILES. T.H., MCMULLEN J.S., *Theory evaluation, entrepreneurial processes, and performativity*, The Academy of Management Review, **41**, 3, pp. 544–49, 2016.
36. BEJAN, A. LORENTE, S., *The constructal law and the evolution of design in nature*, Physics of Life Reviews, **8**, pp. 209–240, 2011.