Typology of Migrations and Living Systems Theory

1 Introduction

W. Petersen, author of the well-known typology of migrations, said: "the most general statement that one can make concerning migration must be in the form of a typology, rather than a law" (Petersen 1969). Existing approaches to the classification of migrations are based on various features of peoples' spatial movements, such as voluntary-involuntary, innovative-conservative, political-economic, legal-illegal, and international-internal. Petersen's typology divided migrations into five classes: primitive, impelled, forced, free, and mass. Each class was further subdivided into two types: conservative migration, in which the mover changes residence to maintain his/her present standard of living, and innovative migration, where the move is made in order to improve living standards. An earlier approach by Fairchild, cited by Petersen, proposed such classification based on migration between societies with different levels of culture, peaceful-warlike distinction, and differentiation among colonization, immigration, invasion, and conquest. The approach to migrations typology proposed herein is based on the analysis of growth, transformation, and interactions of social systems regarded as a kind of living system within a framework of the Living Systems Theory (LST).

2   Data and Methods

An analysis of migration streams, which included immigration to the United States and internal migrations in this country from the XVII to XX centuries, served as the basis for building the migrations typology. Building the migrations typology at least in its initial stage does not require quantitative data, which are usually scarce in the research of migrations. Instead, we relied on historical and sociological texts about immigration to the United States and on American history, which provided a good description of migration processes. An analysis of these texts was performed using a qualitative research method known as grounded theory, which was developed by sociologists Barney Glaser and Anselm Strauss (Glaser, B. G., & Strauss, A. L., 1967) and includes segmenting analyzed texts into quotations, adding comments and memos, and coding the selected passages, thereby greatly facilitating the creating of hypotheses. Comparing important segments leads to a creative conceptualization phase that involves higher-level interpretive work and theory-building. Qualitative research is a type of study that produces findings not identified by statistical procedures or other forms of quantification (Strauss, A., Corbin, J. 1990). The texts used in this study (e.g., (Dinnerstein and Reimers 1999) were analyzed using ATLAS.ti software package (The official ATLAS.ti info brochure 2009). We do not describe the process of building of the typology and do not present here citations that helped to ground the proposed migration typology; these will be provided in the full version of the paper.

The theoretical framework for analysis of migrations was the LST developed by J. G. Miller (J. G. Miller 1978) (J. L. Miller 1990). This theory regards each living system (LS) as being comprised of twenty subsystems that process information and matter/energy inside the LS and between the LS and its environment. Subsystems that process both matter/energy and information are the (1) reproducer and (2) boundary. The subsystems that process matter/energy only are (3) ingestor, (4) distributor, (5) converter, (6) producer, (7) matter/energy storage, (8) extruder, (9) motor, and (10) supporter. The last ten subsystems process information only. These are (11) input transducer, (12) internal transducer, (13) the channel and net, (14) the timer, (15) the decoder, (16) the associator, (17) the memory, (18) the decider, (19) the encoder, and (20) the output transducer. These twenty

subsystems are analyzed at eight levels: cell, organ, organism, group, organization, community, society, and supranational system. The first three constitute the level of biological living systems; the remaining five comprise the level of social living systems. The definitions of the subsystems used in this text will be provided below, as appropriate.

Combining qualitative research with LST allows for generalizing previous approaches and combining them with the one proposed herein in order to expand the understanding of migration processes.

3 Typology

LS of each level—from cell to society—migrate. We speak here about migrations of LS of higher levels—humans, groups, and communities. In human LS, functions of every subsystem are performed by people, whether directly or indirectly. The move from executing some function in one subsystem into another is migration. More than two subsystems may be involved. Migration streams move matter and information between different LS or between different parts of one LS. Accordingly, we may classify migration streams by subsystems of LS involved in their creation. This paper analyzes only migration types defined by subsystems that deal with matter. The following list does not exhaust all types of migrations that can be defined according to the twenty subsystems of LS and their combinations, but names only the primary cases.

Reproducer-type (R-type). "Reproducer" is the subsystem capable of generating other systems similar to the one in which it resides. R-type migration is a migration flow that aims to create new LS resembling its parental LS in some other place. A social living system achieves this by forming streams of migration, information, and matter between the place of origin (the parent LS) and the place of destination (the child LS). The founding of an overseas colony is an example of R-type migration. R-type migrations are also responsible for the emergence of durable immigrant enclaves. Invasion into foreign territories usually involves this type of migration.

Extruder-Ingestor (E-I-type). "Extruder" is the subsystem that transmits matter/energy out of the system. "Ingestor" is the subsystem that brings matter/energy across the system boundary from the environment. A flow that transfers lower-level LS between higher-level LS is an extruder-ingestor type of migration. The migration of individuals or groups of people from one place to another with their consequent absorption is E-I-type migration. The internal migration of people from one region to another in the same country is an example of E-I-type migration.

R-type migrations are usually more conservative than E-I-type. In the latter case, migrants are ready to change their way of life in accordance with that of a place of destination; in the former, they intend to create LS similar to that in which they lived.

Motor (M-type). Motor is the subsystem that moves the system or parts of it in relation to part or all of its environment or moves components of its environment in relation to each other. A flow that transfers lower-level LS between parts of higher-level LS is a motor type of migration. Thus, a migration system—that is, a stable set of streams of people, capital, goods, knowledge, and so on between several geographical units—may be seen as an M-type migration within LS of a higher level. M-type is generally internal migration; however, territorial expansion of LS, such as conquest, may be seen as an M-type migration. Commuting is also a migration of the M-type.

The migrations discussed thus far are the basic types; the following types may be considered as variations of the M-type. Migration also may belong to more than one type of migration because it may be composed of a several interwoven migration streams.

Supporter (S-type). This subsystem maintains the proper spatial relationships among components of the system so that they can interact without weighing each other down or crowding each other. It usually involves involuntary or organized migrations in order to receive a firm structure of population. The creation of a new settlement in a border region and sending of professionals to work at specific enterprises by contracts in order to support this enterprise, due to political purposes, are examples of S-type migrations. Residential migrations may be placed in this category.

Distributor (D-type). This subsystem carries inputs from outside the system or outputs from its subsystems around the system to each component. This type may be related, usually, to involuntary or organized migrations aimed at receiving desired population dispersion.

Converter (C-type). This subsystem changes certain inputs into the system into forms more useful for the special processes of that particular system. Such may be organized migration aimed to alleviate E-I immigration. Sending immigrants to special schools to study language or a required profession is an example of such migration.

Producer (P-type). This subsystem forms stable associations that endure for significant periods among matter-energy inputs into the system or outputs from its converter, such as materials being synthesized for its growth, damage being repaired, or replacing components of the system. This kind of migration serves to prepare people for special tasks, such as a profession or initiation—namely, building their human capital. It is similar to C-type, but relates not to changing human capital, but to its creation, as in the case of sending youth to study in a larger city. Job-related migrations belong to this type.

Two additional types of migrations are in fact non-migrations. It is very important to consider in one theoretical scheme migrants and stayers.

Boundary (B-type). Boundary is a subsystem that holds together the components making up the system and denies entry to various sorts of matter-energy and information. Non-migration may be related to this subsystem. In this sense, staying may be regarded as a B-type migration, and stayers may be placed in one theoretical framework with movers.

Matter/Energy Storage (Mes-type). Matter/Energy Storage is a subsystem that places matter or energy at some location in the system, retains it over time, and retrieves it. It may be associated with impelled, forced, and voluntary non-migrants. Migration of this type is closely related to B-type.

4 Discussion

Existing typologies of migrations may be analyzed and reformulated in the terms of LST. As previously indicated, Petersen's typology defined five types of migrations: primitive, impelled, forced, free, and mass. Each class was subdivided further into two: conservative migration, in which the mover changes residence to maintain his/her present way of life, and innovative migration, where the move is made in order to change the way of life. From the LST point of view, this typology is based mostly on the 'Decider' subsystem or on a number of such subsystems of different LSs at various levels. The 'Decider' subsystem receives information from all other subsystems and transmits information to them that controls the entire LS. For impelled and forced migration types, the role of the 'Decider' subsystem is played by other LS, usually of a higher level. The difference between impelled and forced migrations is in the degree of involvement of the external 'Decider' sub-

system in migration decision-making. In other types of migrations in this typology, the decision is a function of the internal 'Decider' subsystem of the migrating LS. In the case of Petersen's typology these LSs are organisms—that is, people. The difference between innovative and conservative types is also a function of the 'Decider' subsystem because the distinction lies mostly in the intentions of the migrants and to a lesser degree in actual results of the movements. At times, the initial intentions of migrants may change under pressure of circumstances; the resulting migration stream also changes accordingly. Other classifications of migration may be interpreted in terms of LST as well. Thus, internal-international, mover-stayer, and legal-illegal (regular-irregular) distinctions are based on the 'Boundary' subsystem. Fairchild's classification of migrations into colonization, immigration, invasion, and conquest may be placed into R, E-I, or M-types of migrations. Migrants' move between the 'Producer' subsystems of different LS may be called labor migration if these migrants have relevant occupations. When a migrant moves from an information processing subsystem in one LS to a similar one in another LS, the migration may qualify as 'brain drain' because high-level specialists function in such subsystems. If these subsystems are interconnected by information streams, this migration may become a 'brain gain' if outmigrants transfer to stayers useful knowledge and input and output transducer subsystems of the interconnected LSs may communicate with more ease.

Applying LST in migration theory may be further expanded. Various combinations of subsystems at different levels of LS may be used to refine definitions of migrations types. For example, migration that moves lower-level LS from one subsystem to another in higher-level LS, such as relocating people acting in the 'Producer' subsystem to roles in the 'Matter/Energy Storage' subsystem of the community or society to which they belong, may be classified by subsystems involved in the process and by type of transition movement. Such types of migration may be denoted as P-Mes-C-type. This approach may yield a more detailed and more comprehensive typology of migrations that is presented in this paper.

Considering migration as a part of a broader socio-economic system is essential for understanding human migrations. The proposed typology may be useful for realizing the system approach in the study of migrations initiated by Mabogunje about four decades ago (Mabogunje 1970). Existing theories and typologies of migrations are based on different and usually mutually complementary principles. A system approach may consolidate them into a more comprehensive, more productive framework for future research.

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