

## Notes on Infrastructure and Development

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Infrastructure is often thought in terms of being the “interior” of structures which hold them together. And while this is true of the physicality of buildings, in virtual structures “infrastructure” refers to conjunctive syntheses that through the repetition overseen by rules or immanent through custom, come to allow certain types of expressions to occur. The term “infrastructure,” thus, refers to standards by which certain regimes of expression meet and produce some affect(s), and inversely, certain series of explanations are given in order to describe those affects. Those affects obtain the status of effects if the conjunctive syntheses that lead to certain affects are necessary for those affects, and thus they are known as “causes.”

Infrastructures in this sense are numerous, and depend upon the methods of analysis used to describe them.

Physical objects may be analyzed according to various regimes or “planes” of descriptive analysis. The late theorist, Félix Guattari showed that a single event can be analyzed within various discourse “assemblages” (or networks), which, we will add, may lead to relatively consistent expressions, and thus, to the claim of constituting infrastructures. For example, a plane at takeoff can be analyzed: 1) according to its engineered structure under various aerodynamic forces, 2) according to aerodynamic forces in conjunction with weather variables, 3) as a social event; it may even—in terms of its passengers—be measured in terms of its psychological processes (group or individual). Each of these discourses constitute various explanations of “the plane at takeoff” and they not only give the various efficient causes that lead to various elements of the event, but they give explanations of the formal conditions (the “formal causes,” to stay with the Aristotelian vocabulary) that allow or “afford” the event as an expression of potential powers. “Infrastructure” may be seen as the prevalence of those conditions of affordance. The term “context” is often used instead of “infrastructure.” We use the term “infrastructure,” here, in order to suggest that “context” is not natural, but constructed over time, that is, by means of repetition in psychological development, the establishment of custom and habit, etc. We also wish to suggest, here, that “infrastructure” is “context” that can be internalized in the form of the development of personal psychological indexes for action or remain in more narrative or representational forms for social action (social psychology).

Thus, at the level of assemblages, infrastructure can, first of all, be analyzed by efficiently causal relations between parts, as commonly happens in the social

sciences. This is difficult, as what may appear as causal may actually be co-determinate or coincidental. The lack of repeatability in social science empirical analyses leaves problematic the establishment of strict efficient causality. Another type of causality for examining infrastructures, however, is that of the formal affordances of expressions. Here, various assemblages act as means for certain type of expressions. This type of analysis is more common in cultural studies, where formal categories or “contexts” are examined for their ability to determine expression. The French term in Foucault and in Deleuze and Guattari’s works, *dispositif*, is often translated as “apparatus” or “assemblage,” which, though correct, may mask the link between the French works and works on dispositions and affordances in the English literature (for example in the philosophy of science, e.g., the work of Rom Harré and other works on physical, but also, personal and social psychological affordances). The history of theories of dispositions and the relationship between Scottish philosophical and German *Naturphilosophie* of the 18th century and these more recent French and English traditions of the 1960s to the current day remains largely unexplored. While analyses of infrastructure in terms of social science methods are quite common, it seems more fruitful, or at least, high time, for the notion of infrastructure to be examined in terms of dispositions, and with this, the formal construction of powers and resultant expressions. For, only as expressive repetition can we arrive at a core sense of structure—which the term “infrastructure” seems to suggest. And together with those expressions we must examine the formal “contexts” which allowed them. This was intrinsic to Foucault’s work, for example.

One area of infrastructure which Foucault’s work dealt with is the role of standards as pedagogical and as other developmental agencies in maintaining infrastructures, both as primary social structures and as secondary descriptive-analytical structures, which themselves may be taken as primary in some instances. Geoffrey Bowker and Susan Leigh Star’s book *Sorting Things Out* showed some social dimensions of classification structures, for example. Classification and other “frames” become social and mental infrastructures by referring to the position of the subject in relation to the world as a whole. Standards, in this sense, are not simply explicit rules for relating to the world, but are learned toward expression. For the child, parents act as standards for how the world is structured. While such examples commonly point to the mimetic aspect of such in terms of modeling, perhaps more important is that such “standards” create indexes for the child to orient themselves in the world. The importance of the parents is not that of being models, but rather indexes to ways of organizing the world. Models can be judged; indexes are more difficult to put at a distance, since they organize representations instead of being representations. Psychological indexes are not satisfactorily portrayed as being “mental models,” but rather, they are more satisfactorily conceived in terms of being performative indexes for cognition and recognition. This is to say that mental “infrastructures” are not primarily representational and mental, but instead, that they are indexically formed in reference to constructing “life-worlds” that we grow up in and then assemble as our “mental references” (knowledge) and then use. Group psychology may be dominated by

representational or, at least, narrative elements, but personal psychology—at least at its primary stages—seems to be constituted by the developmental acquisition of indexes for action and for understanding. What this suggests, first of all, is the importance of early developmental experiences for organizing personal “infrastructure,” and secondly, the gap that exists between personal and social psychology as a difference between an indexically dominant psychology and a narrative/representational one. Such a difference between these different infrastructures has many implications, only a few which we shall mention in what remains here toward exploring the problem of attaining social action that leads to dynamic and long lasting notions of cities.

To restate the issue on a broader scale: if personal identity and group identity are, thus, differently (though not exclusively so) developed, then what does this have to say about the role of personal identity in its relation to social infrastructure? This is a key question, as it poses the problem of the modification of local affects, as well as the modification of more general social structures, including those produced by the media, in their incorporation into the “I” of agency.

Anthropological analyses as well as my experience in ordinary life tell me that people’s social lives are largely built at the level of highly localized relations, even when more generalized media intervene as tools or ungraspable ideals. The investments of more general social psychology into local indexes and their personal affects, through the media or through environmental design is smooth (or in the view of the Frankfurt School, sedating) if the receptive localized agents already have indexes for absorbing these narrative or representational ideals, including at the level of self-identification. On the other hand, in poorer urban and rural communities, wide gaps can exist between local indexes and representations of wider, normative social action. Without strong, localized, mediating agents and educational structures, personal strivings in these situations can become bitter, marking the difficulty of mediating local indexes with larger social representations and narratives. Agents may find huge gaps between personal possibilities and larger social models or ideals. Within an ideology of social and political democracy, the possibilities of personal potential and social forms for expression are supposed to be somewhat related. Those forms include narratives and representations of what constitutes life. Hence, large gaps between localized indexes and more general social forms for action and representation can lead to bitterness and (self) destruction. Simply put, people will feel abandoned by a promise of participation and identity whose formal conditions remain not only out of reach, but have not been developmentally prepared for.

To summarize: first, it is necessary to shift the focus of examining infrastructures from efficient to formal (to use the Aristotelian terms) causal foundations. The architectural metaphors for “infrastructure” fail to adequately describe the role of formal conditions in constituting expressive powers in human affairs. “Power” means the potential to express and the repetitions of expression that lead to standards (which may be “powerful” both in terms of being generative

forces and in terms of being repressive forces). Second, we must distinguish between various types of infrastructures—personal, social, indexical, representational, etc. Last, we must describe the interactions of these different infrastructures in given situations.

City infrastructures are complex spaces, made up of both highly localized and highly universal affects or as Manuel Castells called them, “information flows.” The one thing that urban development has taught us, however, is that addressing simply physical infrastructure or any other “synchronic” problem while not addressing the development of local, diachronic and developmental relationships produces short-term solutions. While physical infrastructure can be invested in for short-term goals, over the long term cities are durational entities, built up of long term, localized relationships that can survive major environmental devastations (San Francisco through various earthquakes and fires, New Orleans will be a case arising out of a more recent disaster). While the buildings disappear and the “downtown” hype of the city becomes a lie (“Detroit—Motor City”), people remain. But what remains of their ability to cohere as a city, that is, to have an expressive power on a national, international, or even a statewide scale, is a function of the educational and other cultural and familial institutions that support localized life and build up early, developmental indexes based on trust and communal affects. Cities are made up of neighborhoods, and neighborhoods of families and friends. It is through such families and friends that the larger social forces of modernity, such as the media and distant political structures, are mediated and reinvented in terms of the locality. It is through families and friends that larger social progress is achieved and, also, the larger totality changed.

While we have been wise to study infrastructure at the level of physical and capital flows and other social (efficient) causes and effects, we should turn our attention now to examining localized expressions and their affective relations and indexing as well, in order to determine the difference. Ultimately, infrastructure is a problem of time, rather than that of horizontal structures alone. It is a diachronic problem of expression, not just a synchronic problem of “structure.” We may have been blind to this because of the power and prevalence of corporate and short-term political interests and their investments. But, cities are built up by generations, expression is a problem of development and developmental psychology, and the indexes for the future are built up gradually and form the long-term skeletons for human relationships. Fortunately or unfortunately, a polis is built person by person and bootstrapped into existence. We have witnessed a long-term tendency toward disinvesting “politics” of this sense, and our analyses of social and political structures often reflect this deficit.