"Swarms of Power and Knowledge in Marx and Foucault"
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My goal today is to utilize insights from studies of swarm intelligence to examine the degree to which Marx and Foucault understand the individual/subject in complementary ways. This theoretical paradigm provides a way out of the micro-macro problem that is not dependent on either a micro-reductionist position that sees a given larger social body "as a mere aggregate, that is, as a whole without properties that are more than the sum of its parts'" (DeLanda 5), a macro-reductionist position that does "not [necessarily] deny the existence of individual persons but assume[s] [. . .] the micro-level [is] a mere epiphenomenon" (DeLanda 5), or a meso-reductionist position that arbitrarily chooses some entity between the micro and the macro as the ultimate source of both spheres (DeLanda 5). Because this paradigm treats the micro and the macro as joined fluidly, and that relevant causal factors can emerge from any social level, and may interact on many levels, it has the potential to give us a way to examine the consequences of Marx's and Foucault's positions without falling victim to the same perspectival limitations that may be present in their work.

I will begin by explaining what I mean when I refer to swarm intelligence. Johnson suggests swarm intelligence studies began with the examination of a particular slime mold (*Dictyostelium discoideum*), whose odd behaviour puzzled generations of scientists (*Emergence*, 2001); though a mass of slime mold does not have any central intelligence, it moves from one source of food to another, and sometimes disappears altogether. It was not until 1970 that Keller and Segel ("Initiation of Slime Mold Aggregation," *Theor. Biol.* 26, 399) realized the source of these odd characteristics: the slime mold exists as two different organisms; when it is beneficial to do so, individual single-celled organisms join and function as a single unit that displays rather complex behaviour, without any central organization; however, when it is more beneficial for each of the organisms to exist in isolation, each single-celled organism leaves the group and lives on its own, causing the slime-mold to 'disappear.' Since Keller and Segel, swarms of individual organisms that have the potential to converge and act as a group without central organization have been discovered at every level; at the smallest level, all of the cells in any body, which somehow exist as a whole unit, function as an instance of swarm intelligence. At the largest

level, the rules of swarm intelligence govern many human interactions, and provide insight into phenomena such as traffic jams and fads (*Emergence* and *Sync* outlines many of these studies).

The problem with applying this methodology to Marx arises from the question of which of Marx's writings to discuss. From a swarm perspective, the Marx we see in the "Excerpt Notes of 1844," who insists, "The rule of the person over the person now becomes the universal rule of the *thing* over the person [. . . until] *money* is the sensuous, corporeal existence of that *alienation*" ("Excerpts [. . .] (1844)" 270), seems to adhere to a certain degree of micro-reductionism. On the other hand, the Marx of *The German Ideology* who suggests, "the class which is the ruling *material* force of society, is at the same time its ruling *intellectual* force" (*The German Ideology* 61) seems to adhere to macro-reductionism (Wood 13). However, the micro-marco problem becomes especially central to Marx's philosophy in his discussion of revolution. I would like to call to attention the famous conclusion of *The Communist Manifesto*: "The proletarians have nothing to lose but their chains. They have a world to win. / WORKING MEN OF ALL COUNTRIES, UNITE!" (*Selected Works* 137). This is the statement of someone who clearly understands the power of an adequately large swarm. Interestingly, though such a statement may seem to lead to a micro-reductionist position, one should notice that Marx is both calling the workers of the world to action, and attempting to manipulate the macro-level discourse that structures possible individual thought and action in *The German Ideology*. The revolution, for Marx, is rooted in the emergence of a proletarian revolutionary/political force to counteract the force that will certainly be exerted by the capitalists (*Selected Correspondence* 270-1). In terms of swarm dynamics, this might be seen as undermining the capitalist swarm by both changing the behavior of individuals whose actions would otherwise support capitalism so that they cease doing so, reducing the population of the capitalist swarm with the hope that this will reduce its power, and by forming a new macro-force out of these individuals who have been siphoned from the capitalist collective—in a sense, creating a new macro-level collective to do battle with the capitalist macro-level collective. This account fits with both historical evidence, and contemporary accounts of swarm-dynamics.

While Marx seems here to grasp what I might term an emergence from the micro to the macro, the events that Marx sees as following the revolution seem much more naive. The problem is evident in Marx's famous dispute with Bakunin that had a role in breaking up the First International (developed 1864). As Jonathan Wolff explains, Marx believed that a

'dictatorship of the proletariat' was a necessary stage following the revolution, but would simply "'wither away'. Bakunin countered that once it had its dictatorship the proletariat would never let go" (Wolff 92; see also Blackledge 147). Though Marx understands Bakunin's position as naive, calls Bakunin "a man devoid of all theoretical knowledge [. . . and] a nonentity as a theoretician" ("Letter to F. Bolte, November 23, 1871," *Selected Correspondence* 270), his assumption that such a collective as a proletariat dictatorship would simply dissolve on its own accord seems simply absurd. In the case of the slime-mold, the swarm only dissolves once the fundamental rules of interaction change at an individual level, and individual cells cease to be attracted to cyclic AMP. But I see no reason to assume that the individual motivations would change this dramatically under a proletarian dictatorship. It seems much more likely that this collective spirit on the individual level is something analogous to sniffing out cyclic AMP rather than avoiding or remaining indifferent to it, and is more likely to result in the maintenance of existing macro-level entities, or the birth of new macro-level entities, than it is to lead to the existing proletariat dictatorship simply dissolving.

Foucault's model is much more consistent from a swarm-based perspective. This is first evident in his archaeological works, where a complex discursive network shapes what can be said at a given moment. Interestingly, Foucault's archaeological writings are often described in words that might be understood as implying that Foucault's early work is an extreme form of micro-reductionism (Mills 26), and this is probably how Foucault would like his work to be taken; when asked who or what is behind the formation of discourse, Foucault did not respond by directly answering the question, but rather by explaining that this particular question is not the question that interests him most: "What is this anonymous system without a subject, what thinks? [. . .] In some ways one comes back to the seventeenth century point of view, with this difference: not setting man but anonymous thought, knowledge without a subject, theory with no identity, in God's place" (Foucault, cited in Eribon 161; Mills 106). Given this response, it is clear that Foucault is—at least overtly—less concerned with the conditions of the emergence of a discourse than he is with its internal workings. However, the inner workings of discourse are rooted in individual actions in an interesting way. As Foucault explains, "It is not the theoretical choice that governs the formation of the concept; but the choice has produced the concept by mediation of specific rules for the formation of concepts, and by the set of relations that it holds with this level" (*The Archaeology of Knowledge* 82). While discursive relations seem to very

nearly determine what can be said, the fact that only some of what can be said is said—what Foucault terms the laws of rarity (*Archaeology of Knowledge* 133-4)—seems to make individuals central to his model as both moderators and producers of discourse through what may seem to be their mere reproduction of discourse. After all, Foucault does acknowledge, "there cans be no signs without someone, or at least something, to emit them. For a series of signs to exist there must – in accordance with the system of causality – be an 'author' or a transmitting authority" (*The Archaeology of Knowledge* 104). Once it is understood that large numbers of individuals are the physical force powering the seemingly inhuman form of discursive relations, it becomes clear that a complex relationship between the micro-sphere and the macro is behind many of the seemingly paradoxical elements in Foucault's model. Further, if some form of discursive stretching is understood, where the rules defining the limits of a discourse are gradually shifted by statements near the limit of what *can* be said, then a given statement has the potential to dramatically change the course a discourse will take over a long enough temporal period, so that restricted individual choice becomes potentially powerful.

The complex relationship between the micro and the macro is discussed much more explicitly in Foucault's genealogical works, such as *Discipline & Punish*, and *The History of Sexuality*, which explicitly discuss the relationship between knowledge and power, rather than merely dealing with abstract 'discourse.' It is striking that Foucault sees power as existing in an active form between individuals at a micro level; as he puts it in *Discipline & Punish*, "one should decipher in [the micro-physics of power] a network of relations, constantly in tension, in activity" (*Discipline & Punish* 26). For Foucault, it is not only an individual's power that is being used against him or her—this is most clear in the case of punishment—but rather the combined power of everyone who supports—or in many cases, merely does not oppose—the system. Because Foucault believes that individuals are "caught up in a power situation of which they are themselves the bearers" (*Discipline & Punish* 201), it is never merely a question of opposing a faceless power, for power is not faceless. Power has many faces: they are the faces that surround all of us on a daily basis; as far as Foucault is concerned, we are all the faces of power.

For Marx, once individual illusions are eliminated and enough individuals join together, there is no force strong enough to oppose them. However, Foucault's project calls into question whether illusions *can* be overcome by insisting that every relationship is bound up in power, and

all power is bound to a complimentary form of knowledge. The two models are reconcilable when examining the moment when a mass of scattered individuals coalesces into a larger social body, which consequently forges new power-relations; in this moment, the newly emergent social order seems to come alive, defining the actions open to each of its members in a process that is out of the hands of any one individual. While there is a place for the individual as a manipulator of power and knowledge in both Marx's and Foucault's models, Marx's historical materialism largely falls apart at the moment of revolution, while Foucault's model can easily account for the continuing role of power and knowledge following the revolution.

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