

Organizational Genesis in Florentine history: Four multiple-network processes

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Introduction: the question of organizational genesis

Our modern social-science disciplines of economics, political science and sociology currently have sophisticated theories of organizational selection, but not of organizational emergence and transformation. Given a well structured problem, we analysts know well how to tally up the costs and benefits and maximize. But specific alternatives, innovative or not, first have to swim into our academic vision from offstage for those evaluative models to apply. It is not as if the real world does not demand from us theories of genesis, as shown by the popularity of business-school programs on “organizational innovation,” but most of this research, with which I empathize, is groping around – occasionally inspired insights lost in a sea of hype. We creatively finesse our collective ignorance of the process of invention by positing stochastic distributions of outcomes that our fictional agents sample and search, and by estimating the regressions that result. This theoretical situation is like Darwin and Spencer without Mendel and Watson-Crick. Our analytic shears are sharp, but we still do not understand the generative forces pushing up things to be trimmed.

It is not as if our sister discipline of biology is not also beset by this daunting challenge of understanding organizational genesis, but at least they are working on it. The so-called ‘Modern Synthesis’ of Darwin and Mendel, otherwise known as population genetics, made considerable progress by focusing on changing frequency distributions of genes, but only through abolishing the organizational-genesis analysis of the phenotypic organism itself. The current generation of systems biologists is trying hard with considerable success to reassemble these piles of monadic genes back into the self-reproducing and self-regulating biochemical networks of genes, proteins and environmental flux that we call life.

In this chapter, I will review the primary research of myself and others in the field of Florentine history, in order to draw out and to highlight the social processes of organizational genesis to be found there. While not a sample of anything other than itself, Renaissance Florence is a fertile place to look for processes of social invention because of the extraordinary innovativeness of that time and place.

The theoretical perspective undergirding this review will be that of social networks, specifically that of multiple social networks in dynamic feedback. Social network analysis until recently has been justifiably criticized as too static. Elegant cross-sectional statistical measures and algebras (see Wasserman and Faust for survey) elided the reality that social-network datasets typically are snapshots of dynamic processes in time. That criticism is no longer quite so just, as “dynamic social network analysis” is

currently a growth area in the field [survey article?]. But recent work in this area focuses only on single networks¹ through time – either the dynamics of processes like diffusion operating on given single networks of various topological properties (e.g., Watts, Morris), or the growth and expansion of a single network with fixed interactional propensities (e.g., Snijders). These restrictions give rise to the mathematical world of non-linear dynamics (). While quite an important step forward, the only dynamic behaviors ultimately to be found there are convergence, oscillation and chaos. Nothing is to be found there of the evolutionary flavor of new organizations being born.² Nor I would argue can there be, for emergence of something genuinely new almost logically requires recombination/composition of things that precede it, and there must be at least two different things to begin with for that.³

From the perspective of multiple networks,⁴ human organizations, both economic and political, are membership-bounded assemblages of persons and skills that regulate and at least try to reproduce the confluence of multiple input-output flows streaming through them, which bring them to life. In economics, these production flows are products, regulated by the reverse flow of money.⁵ In politics, these production flows are policies or favors, regulated by the reverse flow of votes.⁶ In kinship, these production flows are babies, regulated by the reverse flow of women.⁷ Whatever the domain of flows, any network of interconnected input-output flows must arrange a critical mass of its producing nodes into a positive-feedback cycle⁸ in order to reproduce itself through time. Without reproduction in time, the network does not exist, other than ephemera. Viewed in this light, “organizational genesis” is the co-evolution of cross-domain production-cum-regulatory nodes with the various reproducing network streams of production that flow through them. Nodes are local, but production networks and cycles are global. If global production cycles and/or their catalytic interaction change, local nodes must adapt, or else the multiple-network ensemble does not remain around to be studied.⁹ Therefore organizational genesis, whatever its proximate trigger, ultimately is a system tipping phenomenon. To understand Florentine invention, in other words, requires understanding Florentine history.

¹ A single network is a network composed of homogeneous types of links.

² Of course there are to be found there many variants of the much touted ‘self-organization’ of pattern formation. These are fundamental building blocks, as I argue below. However fascinating and foundational, these necessary building blocks are by themselves too primitive to add up to evolution, biological or social.

³ Sexual reproduction is not strictly speaking necessary for evolution; it only radically speeds up the process through generating variability. If mutation were the only generative process operating in reproduction, then progress in evolution would have been exceedingly slow, perhaps so slow as never to have made it off the ground in the face of hostile environments.

⁴ Multiple networks are sets of single networks that overlap through sharing nodes.

⁵ Or more generally exchange.

⁶ Or more generally support for continuing in state office.

⁷ Women flow between families of men in patrilineage systems like Florence. Men flow between families of women in matrilineage systems. Both men and women flow simultaneously in decentralized matching systems of bilateral descent.

⁸ Or preferably into overlappingly redundant cycles, to be more robust.

⁹ As will become clearer below, the pressures of system reproduction apply with real force only to a critical mass at a core. No ‘system’ is so systematic as to impose consistency throughout. Indeed without contradiction and inconsistency, of which there are numerous Florentine examples in the history recounted below, no evolution would be possible.

The nontrivial trick of course is to extract from this multiple-network theoretical perspective specific dynamic processes or mechanisms of organizational genesis or emergence that do real work in explaining historical facts. In the next section after this introduction, for the benefit of my social-science and biological colleagues, I elaborate the theoretical infrastructure just outlined in the previous paragraph, in order to provide a framework of consistent reasoning about the problem, transposable to other empirical settings. Since this abstraction will be of little to no interest to my historian colleagues, however, let me close this introductory section by jumping right to the explanatory payoff of my approach. After this summary of findings, practical and empirically oriented readers can skip to the history itself, which begins in the section following the theoretical one.

There are four general system-wide processes of organizational genesis that I have discovered in my analysis of Florentine history. Namely,

- extension and differentiation
- fusion and hybridity
- transposition and refunctionality
- multivocality and robust action.

Each of these different processes of separating or recombining multiple networks of production induced a different stage in the Florentine co-evolution of state and markets from 1200 to 1500 A.D.

(1) Extension and differentiation: Florentine state finance of popes and kings grew as natural extension out of the military involvement of many of its leading patrilineages in the Guelf alliance of the pope. Closing the financial loop of repayment required these Florentine patrilineages to differentiate into international trade, but the cyclic violence normal for patrilineage systems kept disrupting this flow. The organizational-genesis solution was to bring short-term contractual economic methods typical of the time into the heart of the long-term patrilineage family, thereby creating an economic nodule within the patrilineage called the international merchant-bank. This unitary organization of kin-related sedentary merchants invented the bill of exchange and induced the demise of the famous medieval Champagne fairs of caravan-based merchant trade.

(2) Fusion and hybridity: In one of the rhythmic peaks of patrilineage factional warfare, asymmetry induced by commercialization led one side (the popolani) to ally with status-inferior guilds in order to defeat their fellow patrician opponents (the magnates). The birth of the Florentine republic – with elected city councils for the first time since ancient Rome – was the fusion of guild principles into the traditional Florentine communal government, which had been based on patrilineage. Popolani merchant-bankers mostly controlled this cross-cutting-cleavage hybrid system as a flywheel, through the commercial court. But as the bounds of citizenship were contested, oscillation between magnate and guild axes of cleavage became ever more extreme, straining centrist popolani unity.

(3) Transposition and refunctionality: The geographically and industrially diversified partnership system, invented in 1382 shortly after the unsuccessful Ciompi revolt, was the transposition, via political co-optation, of master-apprentice techniques from domestic *cambio* banking to the international sphere of merchant-banking, giving them new functions in their now modularized settings. Guild corporatism politically was expunged from the Florentine constitution, since that had opened the door to the Ciompi revolt. The guild interactional practices of economic credit, unleashed from their corporate institutional moorings, blended with the personalism of their patrilineage surroundings to bolster and/or create more individualized social networks of marriage, fictive kinship, and clientage. These newly salient and/or new social networks became constitutive social ligaments in a reconsolidated Renaissance Florentine oligarchy, historically famous for sponsoring civic humanism, republicanism, and art, as well as clientage.

(4) Multivocality and robust action: Fiscal crisis due to wars, mostly with Milan, burst the overextended credit of highly liquid partnership systems and shredded the clientage of many oligarchic patrons. Two parties emerged to contest control of the proud state and the suffering economy: on the one hand, the remnants of the Florentine oligarchy led by Rinaldo degli Albizzi; and on the other hand, an internally contradictory alliance led by Cosimo de' Medici. The latter consisted of marginal oligarchs, tied to the Medici through marriage, and of new-men neighbor-clients, tied economically to the Medici through their bank. Internal cleavage and contradiction between these two sides, spanned only through the Medici family, created a structural opportunity for centralized brokerage with ambiguous and multivocal interests at the center. Cosimo de' Medici translated his centralized, multivocal control over this party into *pater patriae* hieratic embodiment of the Florentine state through the indirection of robust action, subsequently reinforced through clientage sponsorship of the economy.

Far from being randomly sequenced, I hope to demonstrate that each of these organizational-genesis processes in Florence set the structural stage for the next. These causally connected sequences together do not make for deterministic stage-history, but they do illustrate path-dependent branching “topologies of the possible” (Fontana, this volume), wherein each multiple-network system has a small set of vulnerabilities and hence transitions latent in itself.

The following section sketches the ‘biochemistry’ of social networks in general. Subsequent sections put this unusual theoretical perspective to work in describing the co-evolutionary history of social networks in late-medieval and Renaissance Florence.

Theoretical perspective: regulating multiple autocatalytic networks in interaction

Be molecules, words or tools the basal material, combinatorial explosion is the generative force pushing up things to be trimmed. If raw and random, this dissipates into

chaos or noise. But feedback can reinforce and suppress, and thereby mold, combinatorial explosion into channeled growth and coherent structure (Kirschner and Gerhart). The issues for understanding organizational genesis, therefore, are the natures of these combinations and of these feedbacks.

As described in the previous chapter of this volume, autocatalytic networks are sets of nodes whose interaction reproduces those nodes (along with other parasitic hangers-on). In the biochemical origins of this idea, nodes are molecules, which interact to produce other molecules (Fontana and Buss 1994 and literature cited therein). In economic applications, nodes are production rules or ‘skills’, which interact to produce more skills via trading products (Padgett, Lee and Collier 2004). From the molecular perspective, production rules are just high-order (more complex) products¹⁰ that transform lower-order (simpler) products. In either case, feedback is when higher-order products affect or regulate the production of the lower-order products out of which those higher-order products are made.

Seen dynamically, autocatalytic networks are ‘vortexes’ in flows of interdependent production, which (absent disturbance) maintain themselves through time. As such, they are fundamental ‘self-organizing’ building blocks for the evolution of life. But they are not evolution itself.

Cycles are central in the dynamic reproduction of autocatalytic networks. Positive feedback is always the secret to explosive growth – or growth at all, if there is a pervasive enough background of death. For organized life of whatever form, what needs to grow is not so much production itself but rather the capacity for production – be that of economic products, of political decisions, of family babies, or of biochemical molecules. In the face of entropic decay, due to forgetting or to migration off stage, dynamic systems in order to perpetuate through time (and hence to exist) must actively make new copies of the production rules of which they consist. In biological systems, this is called reproduction. In human systems, this is called learning.¹¹ Whatever the label, interactions between nodes somehow need to induce those nodes to generate the capacities to repeat those interactions in the future, as well as maybe to do something new.¹²

Evolution is when autocatalytic systems themselves are transformed.¹³ The primordial regulatory step is embodiment. Embodiment, or stabilized spatial propinquity, holds together chains of rules and gives their interdependent production flows a chance to become recurrent. It also gives reproduction of rules a chance to accumulate. Put another way, stabilized spatial propinquity induces heterogeneity in the spatial distribution and

¹⁰ ‘Higher-order’ just means further down the production chain. Usually high-order is also ‘more complex’ in some structural sense, but not necessarily so. Call these higher-order products ‘artifacts’ if you wish.

¹¹ In the literatures with which I am familiar, the word ‘learning’ has the unfortunate connotation of always applying to something new. But (re)learning old things is probably even more important to survival.

¹² In any localized sector, zero-sum importation, like hiring experts, may be enough. But at the global level of the autocatalytic system itself, generation of rules (old and new), not just reshuffling, must occur for all sectors to survive. This is the problem with any purely competitive model of markets based entirely on ‘selfish’ taking with no ‘altruistic’ giving. No real market could reproduce itself through time this way.

¹³ Idea of species. [cf. evolution of ‘banks’ to evolution of ‘banking’]

interaction rates of adjacent production rules, which permits reinforcement and hence ‘memory’¹⁴ to build up through use (Padgett et al., this volume). Chemically speaking, this why cells on up to people are so useful – to stabilize the reproduction of autocatalytic networks of chemicals that flow through them, and to register successes of the past in doing so.¹⁵

From the point of view of the overall autocatalytic network of collectively transforming production flows, embodiment is a partition of subsets of that network, defining localized ‘interiors’ and set-complement ‘inputs’ and ‘outputs’ between those. It is not necessary that interior subsets themselves contain mini-autocatalytic cycles – that is, little cycles or ‘eddies’ within the overall cycle(s) – for the overall autocatalytic network to reproduce. If they do (at all nested-set levels), then Simon’s “nearly decomposable systems” image (Simon 1968) of hierarchical modularity applies, as a useful framework for abstractly understanding evolution. But if they do not, then this widely used, and cognitively comfortable, hierarchical image of nested modularity is misleading. I will return to this question of macro-structure, and its interaction with alternative processes of evolution, in the final section of this chapter. Conceptualizing non-hierarchical evolution is one potential payoff of the multiple-network approach.¹⁶

Mobility for the agent or container and elaboration of the autocatalytic network itself are evolutionary paths opened up by embodiment. Containers of rules have ‘addresses’ if perceptual protocols can evolve through which those containers recognize each other. Recognition transforms recurrent flows of products into discrete ‘networks’ of communication through introducing conditionality in actions. Social networks thereby can come partially to substitute for physical space, in its function of preserving autocatalytic stabilization and memory (Cohen et al.), while at the same time enabling greater mobility and exploration.¹⁷ Regulation and production gain the potential to diverge in their network topologies, setting the stage for the next evolutionary step into multiple networks, even though they likely began in topological synchrony.

It could be misleading to follow the methodological-individualism strategy of assuming the temporal sequence first of the evolution of embodiment and then of the evolution of recognition protocols. Viewed processually, embodiment after all is just a production-rule subset, which could just as well have been induced first as an attributional category or ‘label’ through recognition by complementary outside rules,

¹⁴ By ‘memory’ I do not necessarily mean anything cognitive here. Just the build up of past behaviors in physical residues, like stigmergy in ants. (Cognition, of course, also works like this, through neuronal nets.)

¹⁵ In biological evolution, DNA is an important mechanism for implementing all this. But here I intentionally avoid mention of genes because I am interested in human generalizations of this generic process, wherein DNA is irrelevant. (I regard attempts in sociobiology to make direct cultural analogies with genes to be sociologically uninformed and far too literalist.) The main thing in this section is to abstract the essential logic of any generative evolutionary process, not to prejudge the degree of similarity in biological and social versions. Probably in fact these versions will be very different in mechanisms; for the moment, I leave instantiation of the social version for historical data to decide.

¹⁶ This does not require denial of the reality of modularity and hierarchy, just denial of their inevitability.

¹⁷ Indeed without embodiment and social networks of recognition, mobility would break the input-output production-rule chains of autocatalysis, leading to collapse.

which led thereafter to the interactive construction of entities. Regardless of temporal sequencing, the main point here is the mutuality of construction of embodiment and social networks, either in their simplest form of spatial recurrence in flows or in their more sophisticated guise as recognition protocols.

In three steps, multiple networks, the primary level of analysis in this chapter, are induced through expansion and exploration in the autocatalytic network – both via rules (products) in combinatorial explosion and via agents (containers) in motion.

In the face of stochastic fluctuations, overlapping and redundant cycles are more robust against collapse than solo cycles are, even within fixed rule sets (Padgett, Lee and Collier). On such an overlapping-cycles base, combinatorial expansion in rules in a spatial context leads to superposed autocatalytic networks, which can be represented by overlapping Venn diagrams. Namely the original core of redundant cycles expands into more specialized peripheries, which do not interact among themselves.¹⁸ In this context, shared rules in the core participate in the maintenance and reproduction of numerous autocatalytic flows of production at once. If, further, raw-material inputs are erratically distributed spatially and agent-containers are mobile, then eventually the spatially-extended autocatalytic network will maneuver its Venn-diagram functional structure around to match its extractive rules with raw materials. Ants are a good prototype for this.

Secondly, networks, in the more advanced sense of recognition protocols among agent-containers, stabilize recurrence of production flows, with variable content in flow – specialized in functional periphery, multiplex in overlapping-cycle core. This is almost multiple networks but not quite. This really is a single, multifunctional network, like a family. Namely, differential flows due to varying composition of rules in containers, but fixed obligational connections among those diverse containers. Such stabilization of recurrence is the reproduction in most basic form – as in re-production.

The final step in complete emergence of multiple social networks out of autocatalytic production flows is flexibility in roles. Roles are interaction protocols for recognizing product flows, rather than containers. Rather than product flows coming in, to be responded to or not as a function of interior capacities, roles are like windows that block or open up containers to product incorporation. Flexible roles are like multiple windows that can be opened and closed for variable inputs at different times. Roles, flexible or not, can operate within intersecting networks of recurrent flow, or they can operate in randomized space, just trolling for whatever happens to swim along.

In biochemistry, flexible roles are exemplified by folding. Large complicated chemicals like enzymes can be twisted into various shapes, thereby presenting different active faces to the chemical world for interaction. Humans also are complicated enough

¹⁸ ‘Parasites’ are examples of such expansion techniques. What at one point in time are only free-rider hangers-on, at a future point in time might become an extension of the self-reproducing core, once intermediate cycle-closing links develop to fold them in (Krishna and Jain). Lynn Margulis has argued that mitochondria (?) developed within the cell in this way.

to be ‘folded’, depending on context, into different ‘faces’ for differential social interaction. Adding flexible roles to social networks enables switching in time, and thereby a powerful increase in the adaptability of autocatalytic networks to varying situations. Network ensembles can activate different subsets of themselves at different times; these different subsets are true multiple networks in overlap.

With these three steps of overlapping autocatalytic flows, network stabilization of recurrence, and flexible roles, multiple networks of stabilized autocatalytic production flows emerge, potentially to overlap and co-exist. Given this, the evolutionary question then becomes: when do nascent overlapping autocatalytic networks reinforce and when do they interfere with each others’ reproductions?

Other than by assuming a pervasive background of random death, selection has not been introduced explicitly into the discussion so far – at least not in the usual social-science sense of relative performance of agents. That is because this standard agent-centric definition is too dependent on a macro-structural ontology of hierarchically nested modularity. The concept of evolutionary selection needs to be generalized to fit a broader class of overlapping and interpenetrating networks.

Except in our simplified imaginations, reified ‘environments’ aren’t ‘out there’ choosing among discretely modularized alternatives. Production flows cross-cut them all, crystallizing skeins of agents simultaneously as regulators of those flows’ re-production. At a deeper level than agents, therefore, but through means of agents, multiple autocatalytic flows and their stabilization into networks compete (interfere) or cooperate (reinforce) with each other’s reproduction. ‘Selection’ is the dynamic equilibration of these feedbacks among given¹⁹ multiple networks.²⁰ In the special topological case of near decomposability, this definition converges with the usual one, but it covers a broader class of organizational forms than our usual hierarchical imaginary. When networks are co-extensive, through sharing agents and/or production rules as nodes, then the ‘environment’ of one network is not separate or ‘out there’ unconnected to that network. It is the set of other enveloping multiple networks in which it is embedded. Dynamic equilibration in such a case can become more of a non-linear tipping process than the incrementalism that modularity induces (Wagner and Altenberg). Potentially this includes even such punctuated examples as organizational genesis and speciation (Gould and Lewontin, Kaufmann).

‘Death’ in this systems context can occur in a number of ways. Death for any individual rule or agent is not a worry; that is normal life. But interrupting the flow of regeneration at any point in an interdependent cycle causes that whole cycle to collapse. Interruption can occur stochastically through endogenous fluctuation in the frequency

¹⁹ By the little word ‘given’ I mean to imply that selection, while the crucial filter for evolution, is not its ultimate driver.

²⁰ ‘Fitness’ in the economics literature almost always means relative performance and death rates, but fitness in the biological literature means relative reproduction and birth rates. Relative performance and death rates are relevant there only to the extent that they affect relative reproduction rates. The simple systems definition adopted here, based on autocatalysis, is grounded in the latter understanding of fitness.

distribution of critical components. If one coupled cycle increased the natural fluctuation of another – the opposite of homeostasis – that could head the conjoined system into trouble. Interruption could occur through the bleeding off or ‘high-jacking’ of critical components for another purpose/cycle that shares those parts. Interruption could occur through contradiction – namely, one cycle asking a shared component to do one thing, but another cycle needing it to do the opposite. Increased throughput through bottlenecks might exacerbate either of the latter two vulnerabilities, leading to sudden system collapse beyond certain thresholds. Interruption could occur through backfired growth – namely, one new link switching from positive to negative (or vice versa) some feedback loop in the overall system. Or interruption could occur simply through an exogenous shock or injury, shredding crucial couplings too sharply for the system to recover in time. No doubt this list of potential problems in autocatalytic reproduction could be extended.

Weighing against these potential difficulties, however, are potential benefits to network couplings. Homeostasis is logically just as possible as the opposite. One coupled cycle might provide ‘just in time delivery’ of critical components to another. Multi-functionality, or ambiguity in the human context, might produce misunderstanding blissfully leading to creative exploration, as well as harmful misunderstanding leading to contradiction. Coupled networks might act like immune systems for each other, policing backfired growth. And coupling might even generate enough non-linear flexibility to give the conjoined system the capacity to steer a wide berth around potential disasters. Coupling in and of itself, in other words, is neither good nor bad for autocatalysis.²¹ Everything depends on the details.

Although the word is in danger of being used in so many different ways as to lose its utility, social scientists are likely to evoke the concept of ‘institution’ to refer to cross-domain regulation of such beneficial and harmful feedback effects. In the theoretical framework of this chapter, institutions are the macro-structures of recognition or communication protocols. As such, they do not control production or behavior directly; instead they modify how rules interact and how agents/containers perceive each other²² (Mary Douglas). ‘Macro-structure’ here does not mean hierarchical authority, as it often does in the modularized worldview. It means standardization of protocols across a population. Whether such standardization is achieved through centralization or through distributed mutual accommodation is a matter of empirical variation, not of definition. Language is the most advanced institution known to mankind, but any stylized behavior (human or chemical) that affects the ‘presentation of self’ to another counts as well.

Two generic classes of institutions seem common, which is not to say that there could not be more. Call these framing and switching for shorthand. Both diffuse through shared third parties.

²¹ In this sentence I am arguing against Wagner and Altenberg (), who seem to be arguing that modularity is almost always a good thing. If this were completely true, there would be no pleiotropy for them to be analyzing.

²² This view of institution essentially as collectively shared recognition or perception is closer to the neo-institutionalism of sociology (DiMaggio and Powell) than it is to the neo-institutionalism of economics (Analytical Narratives), wherein ‘institutions’ are defined hierarchically as ‘rules of the game’.

Framing is typically a matter of membership categories. Institutions in this class are arenas, to which only subsets of agents have access. Arenas do not exclude rules that agents bring with them,²³ but they do highlight specific membership aspects of participants, which make them ‘comparable’. Private interests can be as diverse as participants want them to be, but all must communicate through the public discourse of the arena in order to be understood by others.²⁴ Cross-domain regulation here is achieved, at least within the institution, through the privileging of one protocol for communication and interaction across multiple networks.²⁵ City-council election will be a prominent example of this first class of regulatory institution in the Florentine history below.

Switching is typically a matter of brokerage. Institutions in this class are the distributed attributions of localized third parties, who catalyze together other agents into interaction through searching for customized fits. Standardization across third-party brokers is achieved not through homogenized protocols within discrete memberships but rather through a continuous distribution of mutually comprehensible ‘overlapping dialects’ among densely interacting neighbors.²⁶ Cross-domain regulation in this class of decentralized and distributed institutions is achieved through a few generalized tropes, whose practical meaning is malleable and contextually dependent. Civic-humanist oligarchy will be a prominent example of this second class of regulatory institution in the history below.

The above theoretical discussion is hardly specific enough to count as a model. It is instead a modest and incomplete attempt to move social-science analyses of social networks, which currently are either static or only weakly dynamic, onto a more generative and evolutionary foundation. I argue that we should strive for the same level of ambition in our questions as evolutionary biology does in its, without mimicking that sister theory’s exact details. This theoretical reframing is not necessary for all or even most problems of interest to social scientists, but it is crucial for the understanding of organizational genesis and invention. The evaluation of that claim is in the explanation of real history, to which I now turn.

Initial condition: medieval patrilineages

I begin my history of late medieval Florence with “let there be patrilineage families.” By this starting point I mean to approximate Italian-style feudalism around 1200 A.D. Of course I could have started even earlier, to describe the emergence of patrilineage itself, even though the evidentiary base is thin. (See Duby for France,

²³ In other words, economic styles of behavior could well be imported into a political arena by businessmen acting as politicians, thereby affecting politics. I do not imply hermetically sealed role behaviors here, where agents leave parts of themselves parked at the gate.

²⁴ This point has been made in a more sophisticated way by Wittgenstein’s argument against private language (Kripke). What I am passively calling arena, Wittgenstein actively called language games.

²⁵ Multiple arenas, however, enable multiple public discourses (Padgett, SFI webpage article).

²⁶ It is possible that Wittgenstein’s ‘family resemblances’ idea might prove useful in understanding the structure of ‘overlapping dialects’.

Demeron, Hughes, & Lansing for Italy.) In Europe, patrilineage at root was a military alliance of common-descent males, whose primary purpose was to protect and to control land (and perhaps also church offices) against the predations mostly of other patrilineages. Because of this functional foundation, patrilineage was always more an organizational feature of the landed feudal elite than it was of lower-class peasants and artisans, whose families were organized as decentralized kindreds, without last names. Perhaps because of Roman legacy, feudal Italian nobles were always different from their northern-European counterparts in their urban residence, spending most of their year as absentee landlords, in touch with their estates by horse.

From the perspective of autocatalysis, the primary inter-organizational flow necessary to highlight for the reproduction of patrilineage is women (Levi-Stauss, Goody, Laslett). The emergence of patrilineage as an organizational form required a constitutional distinction to be made in landed inheritance between sons and daughters, in order to preserve continuity of estate. Dowry was the consolation prize for girls of their disinheritance (Hughes). With this legal differentiation, “the family” became male, and females became exchanges, to be traded via negotiated alliances among male descent groups. Among lower-class kindreds, marriage patterns were less organized flows approximating Brownian motion – namely, random walks among nearest neighbors in physical space. Among patrilineages, in contrast, marriages became organized into recurrent ‘networks’ of reciprocal- and generalized-exchange cycles (Levi-Strauss). The emergence of male hierarchies of patrilineage and the emergence of organized cycles of marriage for females were two sides of the same family-structure coin.

While this system historically emerged in medieval Europe, earlier than is my primary focus here, I mention it because patrilineage remained, with modification and extension, the social foundation of elite kinship throughout the Renaissance period. It was the initial condition whose path-dependent co-evolution I will trace through various phases of organizational transformation and genesis.

As for economic and political cycles in this stylized feudal era, to situate along side of kinship cycles, economic cycles essentially were non-existent. Agricultural and artisanal self-sufficiency reigned, with not much beyond local and regional markets.²⁷

In politics, though, there was the Church, the most sophisticated structure(s) by far of the period. The implication of the Church for political governance in Florence was a ruling bishop, surrounded by his advisory council of local nobles. After the Investiture Controversy of 1070-90, with its fracture of the old Charlemagne-established alliance of pope and Holy Roman emperor, cities through northern Italy simultaneously became ‘autonomous’ city-state communes (Waley). Local councils of nobles ruled as before, but now without their bishop to steer them. Direct subordination of Florence under the pope devolved over time into loose, fluid and contested alliances of the independent Florence commune with the pope. Throughout the 1200s, a Guelf league of pro-pope cities periodically fought a counterpart Ghibelline league of pro-emperor cities.

²⁷ Luxury goods of treasure symbolic of warrior deference and prowess, as in the culture of Beowulf, would count as an exception to this generalization.

With separation but not divorce from the pope, medieval Florentine politics became essentially the politics of feuding patrilineages, with little else to complicate that. At the local level, each patrilineage lived tightly clustered in its own fortified urban enclave, in feud with other patrilineage neighbors physically surrounding it. Marriage-certified political alliances of patrilineages produced, on the one hand, geographically concentrated hierarchical trees of hypogamy among unequal patrilineage allies and, on the other hand, checkerboard alliances of geographically noncontiguous powerful families (Padgett 1994). The medieval-tower residues of this localized violent feuding can still be seen in many Italian cities today. At the international level, Guelf-Ghibelline alliances of cities had this same checkerboard structure: contiguous cities joining whichever side was the opposite of their hostile neighbor. This whole patrilineage-based alliance framework made for much micro instability and ‘traitorous’ flipping of side, depending on local short-term calculations. In aggregate, however, the dynamics of this framework – namely, waves or cycles of violence among decentralized factions aggregating up into two competing checkerboard ‘parties’ and then down again – served to reinforce and reproduce, not to undermine, its patrilineage structural basis.

In the medieval era, the only exception to this “waves of violence” patrilineage story, consequential for the later 1282 foundation of the republic, was the Popolo episode of the 1250s. Soon after one of these waves of Guelf-Ghibelline bloodbath, with the patrilineage elite collectively but temporarily weakened through internal recriminations and exiles, the lower-class artisans, sick of endless violence among their status superiors, rose up through their artisanal guilds to declare themselves “Popolo” and to demand peace. A tribune-like representative of these lower-class interests, institutionalized as a police force called *Capitano del Popolo*, remained from this brief episode of non-patrilineage politics, even after elite patrilineages regrouped their private militias and Guelf armies to regain direct control over the commune from the guilds.

So much for my initial-condition starting point of medieval networks. With only a few exceptions around the margins, there was only one social network that mattered, patrilineage, which had two functions: kinship and political. This was not really “multiple networks”; this was a single network with multiple functions. Kinship reproduction of cohesive males, for the primary purpose of controlling inherited land, operated through the autocatalytic trading of daughters. Political-faction reproduction, fluid above the physical-neighbor level, also operated through patrilineages, with marriage also used to induce at least some alliance stability. The dual functionality of this patrilineage network generated intense oscillatory dynamics of violence, through positive reinforcement between the two functional flows. This violence was deeply threatening to individual families, but it reinforced reproduction of the patrilineage system as a system.

Extension and Differentiation: the emergence of patrilineage merchant-banks

In the mid-1200s Florence began to add economic trade as a third flow to its single-network, dual-function medieval social system. Instead of generating trade on their

own, the Florentines successfully exploited opportunity handed to them from above. To fight his wars with the emperor primarily, the pope, first in Rome and later in Avignon, needed to move money around his vast but sprawling territories. Within Italy, the Guelf alliance was the natural framework for doing this, using friendly noble patrilineages with clerics in high places. Beyond Italy, transferring Church money also flowed through political alliances, through ad hoc diplomatic channels and emissaries. Through diplomatic means like these, northern-Italian noble patrilineages (not just Florentine, but especially Tuscan²⁸) slowly became spread thinly over the major cities of western Europe, as financial agents of the pope.

Florentine trade emerged not bottom up, from slow expansion of regional to international production, but rather top-down from the implications of state finance – at first under the Guelf umbrella of the Church but then gradually extending their developing expertise (about which below) to the king of England as well. For how were the Tuscan patrilineages to make money from state finance? The Church’s usury doctrine prohibited interest on loans. And medieval clerics and kings had insufficient cash on hand in any event. Within these constraints, the standard feudal method for rewarding supporters was contractual benefices of various forms – control over tax collection and customs, and access rights to ‘islands’ of profitable activity (lands, mines, courts, regional fairs, etc.). Thus a profitable economic symbiosis developed between war-makers and Italian patrilineages, exchanging state loans for administrative control over monetary and in-kind production flows within the primitive political economy of the time.

It is worth a small detour from our main Florentine story to explore why the Italian, and say not the French, nobility moved into this state-finance role. Geographical proximity to Rome (and then to Avignon) no doubt had something to do with it, at least for papal finance. But social structure, I think, is relevant to the explanation as well. The highly militarized French nobility, living in their geographically rooted and agrarian country manors, were haughtily dismissive of mercantile activity in politically subordinated towns. State loans to kings were often to pay them. The Italian nobility in contrast lived for the most part within their own autonomous city states, cheek-to-jowl with both mercantile and church-administrative activity, making them not more peaceful but more diversified behaviorally. The Italian checkerboard political structure also played its part in encouraging and sometimes enforcing, through exiles, geographical mobility. While the medieval French nobility moved around transiently in armies, most dramatically in the Crusades, the medieval Italian nobility moved around diffusely but more permanently as diplomats and administrators, and eventually as merchants.²⁹ As a result of all of these pressures, French and English nobility were geographically concentrated, whereas Italian nobility, while having geographical roots, were more sprinkled around, available to be mobilized for new functions.

²⁸ Genoa and Venice were preoccupied with naval matters. Home-grown Romans, surprisingly few in any event, were too closely embroiled in the vicious factionalism of the papal court to have any geographical reach or to be reliable.

²⁹ And of course as sailors for those Italian cities (unlike Florence) on the seacoast.

State-finance banking in Florence, therefore, started as a corollary or auxiliary **extension** of political patrilineage, under top-down war-driven stimulus first from the pope and then from kings. Economic trade per se emerged to close the economic loop of this state finance, because otherwise neither the pope nor kings could ever repay their loans. Perhaps the most lucrative and consequential example of such a repayment flow for Florence was the export of raw wool from England to Flanders for the production of Flemish woolen textiles. Before the Florentines linked this non-Italian manufacturing activity into Italian state-finance flows, Flemish fabrics were mostly sold to migrant merchants from all over Europe at the famous northern French fairs of Champagne. How the mostly Tuscan Italians made this non-obvious economic linkage to Flemish textiles is instructive. To repay his state-finance loans, the English king [*name?*] authorized the Italians to take over the tax collection of his customs, the most valuable commodity through which was the export of raw wool to Flanders. The Florentines then leveraged their control over this essential Flemish input into a coerced division of labor: the Flemish continued to make the textiles, but the Florentines would now do the ‘finishing’ or the dying stage of production, and also sell the finished product at Champagne, further extending their already established, geographically distributed network of agents. Later in the early 1300s when Flemish independence provoked war with the French, the Florentines exploited Flemish misfortune to take over textile production itself, using their direct control over the raw material export from England and also the expertise they had developed in their earlier ‘finishing’ period. At this point, the Florentines started selling their own textile products no longer at fairs but through their own “sitting merchant” branch networks directly to wealthy consumers. This was the end of the famous caravan-based fairs of Champagne.

To simplify the economic loop: loans to states making war were repaid in raw wool, which the Florentines turned into textiles for international sale.

From the perspective of autocatalysis, this new economic connection between state finance and international trade in woolen textiles had the potential for being very profitable indeed, but there was one severely disrupting problem – the volatility of war and intentional default by kings. The pope and the kings could make Florentine bankers or they could break them, almost at whim. In order to stabilize their profitable trade, Florentines had to extend and to **differentiate** their business, at least partially, beyond their catalytic state-finance origins. The incremental solution ultimately was to offer the services of their financial expertise and their networks to more customers: nobles and clerics lower in the pecking order than popes and kings, and textile manufacturers, both Flemish and Florentine, who needed delayed repayments. Deposits from nobles and clerics, both Italian and non-Italian, vastly expanded the capital available to Florentine businesses, beyond their original *corpo* or starting capital. Profits to support interest payments (disguised or not) to depositors ultimately came from international trade, mostly of woolen textiles. Differentiation truly became self-sustaining with the invention of bills of exchange, after which profits could be made from private banking – the coinless transfer of customers’ money from one city and currency in Europe to another, without the risk of robbers.

To this point in my synoptic story, the Italian-controlled but Europe-wide emergence of financial and trading cycles out of political cycles has been emphasized, without close attention to the organizational nodes that actually accomplished that task. It is now time to fill in this gap, and thereby derive the organizational-genesis consequences of this early extension and differentiation of autocatalytic financial/trading networks.

Patrilineage was the path-dependent organizational form available in northern Italy for state finance, international trading, or anything else for that matter. Patrilineage happened to have the sine-qua-non advantage that it was already a social machine for pooling assets. With or without the backing of Roman law, tight *consorteria* medieval patrilineages behaved as cohesive units, under the unitary and unlimited-liability control of their male elders. Both of these organizational features had good economic consequences for finance, although of course they were not designed for that purpose. The downside, or at least risk, was that this organizational form was so tied into politics. Politics gave properly connected patrilineages their economic life, but it could also take that life away.

The partial solution to that risk, and to the non-differentiation of autocatalytic networks that created that risk, was the unitary patrilineage merchant-bank. This essentially was a nodule, in partnership form, within the patrilineage. Not all males or even elders in the patrilineage were partners in the merchant-bank. Only a subset of them were, plus a few trusted outsiders (often in-laws). This economic/non-economic role distinction weakened slightly the behaviorally unitary character of the patrilineage, but the assets of the entire patrilineage were still seen as standing behind the bank, as security. In behavior the bank operated as if it were a division of the patrilineage, parallel to the other “divisions” of land-management, clergy, politicians, and urban gangs.

Contractual partnership as an organizational form on first blush seems inconsistent with blood relation. Feudal contracts, including between lords and their vassals, linked unrelated people, creating an obligational bond where there was none. Contracts imply transience, whereas family implies permanence. Contracts imply distrust, whereas family implies loyalty and commitment. Nonetheless, contractual partnerships were standard business practice in the Middle Ages for organizing business ventures (Lopez and Raymond) – although before the development of the merchant-bank these were only short-term expedients for organizing particular caravans or voyages, typically dissolving upon completion of the journey.³⁰ Folding the standard Italian business practice of short-term contractual partnerships into the long-term solidarity of Tuscan patrilineages created something new – namely, an ongoing business organization of sedentary merchants (Gras), whose members no longer moved with their goods but rather sent them around through each others’ stationary ‘branch offices’. Syndicates for individual loans thereby turned into banks, which were geographically distributed networks for whatever purposes happened to suit their partners.

³⁰ Tower societies may also have been a precedent.

This “nodule” solution³¹ to economic-political network cross-pressure did not fully decouple patrilineage merchant-banks from politics. That hardly would have been economically desirable in any event, as long as diplomacy remained the ticket to access to markets. But it did create an organized locus for developing a non-political perspective on the politics of the patrilineage. Internal debate about the patrilineage’s cross-cutting interests, induced by differentiated autocatalytic networks, became enabled. Volatile and cyclic politics still impacted markets, but in a more dampened manner than before.

Patrilineage-embedding of banks affected how economic markets themselves operated. Competition among Florentine merchant-banks was not the polite “race for efficiency through lower prices” affair depicted in neo-classical microeconomic textbooks. As we have already seen, Florentine patrilineages were engaged across the board in violent struggle for domination and control over each other – in politics, in war, in clerical appointments, and in the streets. Merchant-banking remained a part of that, one more weapon in patrilineage civil warfare. As a consequence, every bank was basically on its own, in a Darwinian struggle for survival with its patrilineage counterparts. Largely autonomous competing banks grew, survived and crashed on their own – no mergers, takeovers or helping hands extended to each other. Success meant locking in profitable customers in quasi-monopolies, thereby creating incentives for ‘full service’ vertical integration in financial and trading services. Lateral labor-market mobility across companies, at the level of partners, was of course impossible. Diplomacy and war could be used economically to strangle your patrilineage rival, as well as to gain access to new markets.

All this meant economic “war”, not price competition, but this did not mean a war of all against all. Limited economic cooperation between banks was still possible wherever political alliances between patrilineages permitted. These alliances became the limited framework for economic correspondent relations among banks, which honored each others’ bills of exchange. Bills of exchange essentially were transaction-specific contracts to transfer money, within a specified period of time. This fundamental innovation in banking practice was a logical consequence of patrilineage-bank organizational genesis, because contractual logic was characteristic of markets in this era. Except now there were trusted stationary sitting merchants through whom to pass and to honor these contracts repeatedly. On the whole, however, compared to international banking developments in the partnership-system world to come, inter-bank cooperation, credit and liquidity in the patrilineage-bank world remained severely constrained. No high-credit-interconnection, high-velocity-of-liquidity banking system yet. Just parallel, competing, and largely autonomous organizational hierarchies with limited cross-connections and cooperation.

To sum up this early extension and differentiation phase of organizational genesis: For Florence patrilineages, state finance was a logical extension of their participation in the papal politics of the Guelf alliance, but to be repaid required administering international trade. The volatility of the patrilineages’ dependence on popes and kings created an incentive to diversify and to differentiate their trading from

³¹ Namely, of but not identical to the patrilineage.

their state-finance economic networks. The nodule of a partnership merchant-bank within the patrilineage was the organizational corollary of this macro network differentiation. Sedentary merchants and bills of exchange were the economic innovations associated with this organizational genesis. For patrilineages themselves, more complex competing interests were thereby induced.

Fusion and Hybridity: the birth of the Florentine republic

The next major episode of organizational genesis in Florence was the birth of the Republic, which means the birth in 1282 of the Florentine city council or Priorate. For the first time in Europe since ancient Rome [*check this*], the fully sovereign governing body of a territorial state became based on the principle of formal voting and elections by citizens. Before this, north-Italian communal councils were self-recruiting affairs of patrilineal elites in alliance (Waley) [*get more details*]. Florentine republican ‘elections’ were not the competitive campaigns between professional politicians of today. Rather they were much more actively participatory than that: voters choosing among themselves to take turns (and time out of their private lives) to serve temporarily in public office. The question here is how did such an amazing consequential political organizational invention occur, with reverberations down through the American Revolution (Pocock)? Can the logic of interaction among multiple networks be used to understand political as well as economic forms of organizational genesis?

To do this, let me begin where the previous section left off – namely, with broken symmetry. Before the emergence of international merchant-banks, Florentine patrilineages differed in size and power but not in internal organizational form. After the evolution of merchant-banks, however, some Florentine patrilineages participated in budding European trade³² whereas many others remained traditionally feudal. Eventually this emergent asymmetry interacted with the chronic waves of violence characteristic of the medieval patrilineal system to produce one factional aggregation with more economically oriented patrilineages than the other.³³ During cyclic peaks of violence, bloodshed, expropriation and exile were at stake, so incentives for patrilineages to win were high indeed, using whatever alliance resources happened to be at hand. The political invention of republicanism developed, in my analysis, out of this extremely traditional motivation for patrilineage control, in the new endogenously generated context of commercial-feudal asymmetry in factions.

The 1280 version of traditional patrilineage factionalism pitted [xxx] against [yyy]. To defeat their feudally oriented [xxx] rivals, the more economically oriented [yyy] patrilineages reached down to make a new and revolutionary political alliance with the lower guilds, instrumentally manipulating memories and organizational forms of the old

³² As the “nodule” imagery is meant to suggest, even newly economically oriented patrilineages preserved their militarized and feudal origins as well. The hybridity of an alloy, not the phase transition of total transformation, is another metaphor that usefully characterizes this mixed organizational state of affairs.

³³ This factional correlation with merchant-banks need not and was not perfect, witness the Bardi. It need be only statistically significant to have its ‘broken symmetry’ effect. [*I should do data analysis of this.*]

Popolo episode of the 1250s. Via this alliance after much struggle, the details of which need not detain us, the winning [yyy] patrilineages morphed into calling themselves ‘*popolani*’ and the losing [xxx] patrilineages in 1293 officially were declared ‘magnates’ by the victors, meaning that they were prohibited thereafter from holding political office. Emphasizing the guild aspect of patrilineage was almost the same thing as drawing a *popolani*-magnate distinction among otherwise identical patrician patrilineages. Such legal labeling of ‘magnates’, along with its complement label of ‘people’ or ‘citizens’, locked into legalized political classes what had heretofore been fluid family alliances. This was precisely the point for victorious *popolani*. As long as this *popolani*-guild alliance lasted, outcast magnate patrilineages were permanently frozen out of power, no longer available to contest political control through routine family alliances. ‘Democratization’ left the magnates only revolutionary violence and coup as viable political alternatives – an always potentially destabilizing force indeed.

How was this effective political alliance between *popolani* patrilineages and lower-class guilds constructed? Basically economic organization was incorporated or **fused** into the political state: no longer were guilds only organizations within the economic domain; they now were organizational subunits of the political domain as well (Najemy, AHR). ‘Guild corporatism’ included the political principles (a) that to be a voting citizen one had to be a guildsman, and (b) that city-council seats were elected by guild constituencies³⁴ (perhaps lumping small and weak guilds into larger aggregates for such voting purposes). On the surface, this would appear to give all governing power to artisans, an absurdity at this time, but those patrilineages which engaged in economic activity also were members of guilds. Patrilineages dominated the so-called major guilds (largely export-oriented), and artisans dominated the so-called minor guilds (entirely domestic production). As long as the voting and seat-assignment rules were written correctly, favoring the major guilds, *popolani* patrilineages could politically dominate city government after 1282 through the guild system, just as they had before 1282 through their family networks.

In truth there was, not surprisingly, much contestation and therefore volatility in these Priorate voting rules at the beginning of the republic (Najemy). Guild-corporatist principles jostled and competed with contending neighborhood-based patrilineage principles, without fully displacing them. Various **hybrid** combinations of jurisdictional and voting rules were experimented with, never settling down to complete closure. Guild-corporatism principle (a) remained fairly stable from the beginning, although the original meaning of “actively working at occupation” was weakened to only “formal guild membership”.³⁵ But guild-corporatism principle (b) ultimately gave way to the compromise of nomination through guild but final election through neighborhood aggregates of voters. Florentine elections before the Ciompi revolt, therefore, over time became a hybrid mixture of mobilization of (economically active) guild voters through

³⁴ The Florentine name for its city council – namely, Priorate – derived from the guild-corporatist representation scheme adopted at its origin. The Priorate was originally an assembly of guild priors.

³⁵ This weakening created the odd new legal category of “guildsmen not actually practicing their craft.” Guildsmen in politics, in other words, but not guildsmen in economics.

newly politicized economic networks and of mobilization of (technical) guild voters through older family and neighborhood networks.

This revolutionary political alliance of *popolani* and guilds would never have been possible without real economic ties giving it structure. Hence the time interval between 1250 and 1282, which economic historian Lopez has labeled “the Commercial Revolution” (referring to merchant-banks primarily), was consequential. The politically potent, and *popolani* dominated, alliance of major guilds had as its underlying ligaments economic relations among export-oriented companies. Some of these were correspondent relations among merchant-banks themselves, but even more important were the export-trade relations that developed between Florentine merchant-banks and Florentine woolen-textile finishers and manufacturers. As we saw in the last section, such emerging export-oriented economic ties cross-cut and differentiated from the patrilineage alliances out of which they grew (at least to some extent). Hence politics had more than one social network around which to congeal. This is one of many examples in this paper of states and markets co-evolving.

Actually, political-network hybridity, and the institutional instability associated with that, served well to maintain *popolani* patrilineages in both political and economic control. Guild corporatism, as long as it stayed dominated by international merchant-banks, was an institutional generalization of the network structure of *popolani* patrilineages themselves. Namely, they both were hybrid organizations that reached out simultaneously but separately through economic and family/alliance networks, those partially differentiated. Both *popolani* patrilineages and guild corporatism (again, as long as major-guild dominated) were both “two-legged” creatures that gave to whomever resided at the intersections of their economic and family networks the capacity or ‘freedom’ to maneuver between competing self-interests, as local opportunity proffered.

From an overall system point of view, this unstable hybridized fusion of distinct political principles tortuously survived through “balanced oscillation via negative feedback.” That is, whenever violent threat from excluded magnates loomed, the political cohesion between *popolani* and other members of the guilds would be strengthened. But conversely, whenever minor-guild artisans got too uppity, continuing marriage alliances between magnate and *popolani* patrilineages could be re-politicized, thereby pushing artisans back into subordination within the guild-corporatist frame nominally in their interest. This two-legged system maintained *popolani* major-guildsmen as the class of brokers in control. But it also placed much strain on this loose assemblage to be flywheels for system stability. These two self- and system-interests were in some tension with each other. Maximizing brokerage power requires both offsetting threats to be kept very live (cf. V.O. Key on Tennessee), but balancing off strong threats can turn into a tight-wire act.³⁶

One important second-order institutional invention was created in Florence in 1311 simultaneously to improve elite control and system instability. That institutional

³⁶ This is my structural explanation for the chronic political instability of the early Florentine republic so well documented by Brucker (1962) and Najemy (1982).

innovation was the Mercanzia. The Mercanzia was a commercial court composed of guild-elected representatives from the major guilds, under the additional constraint that only international businessmen were eligible for election. Manifestly this court was set up to adjudicate cross-guild commercial disputes and thereby to tighten legal accountability in the economy as a whole.³⁷ In pursuit of these objectives, the Mercanzia also issued policy recommendations for internal guild ‘reforms’, which usually strengthening the hand of export-oriented businessmen therein. Latently, especially in the first half of the fourteenth century, this court also helped to exert more cohesive political influence by international merchants over the Priorate (Najemy dissertation). The Priorate deferred the making of its economic foreign policy to the Mercanzia. Under a liberal construction, that could cover quite a wide range of issues indeed.

Florentine republicanism before the Ciompi revolt, therefore, was a cross-cutting ensemble of guild-corporatist and neighborhood-patrilineal principles, formally headed by two elected bodies – the Priorate, officially the governing body of politics, and the Mercanzia, officially the governing body of markets. Figure 1 provides a visualization.

-- insert figure 1 from my SFI working paper on republicanism, see end --

Before leaving this section on the birth of Florentine republicanism, in order to set the stage for the next phase of state-market co-evolution, let me describe the vulnerability of this hybrid political invention, even after having been strengthened by the Mercanzia. Florentine republicanism succeeded in moderating, though certainly not eliminating patrilineage feuding, through balancing that traditional cleavage off against the newly mobilized and orthogonal major-/minor-guild cleavage. However tricky this was to manage tactically, such balancing of cross-cutting cleavages could work strategically as long as the number of balls in the air being juggled was more-or-less constant. Elections of the actively participatory form of Florence require limitation of access to citizenship, for the chaos of a truly democratic diffusion of control to be avoided.³⁸ But elections create contestation over “who is a citizen?” If the political conflict was not too extreme, then magnates and minor-guild artisans had incentives alternately to ally with popolani against the other, in oscillatory balance, as described above. But as political oscillation intensified, thereby fracturing centrist popolani, incentives could flip: Both poles can get ‘greedy’, wanting to simplify hybridity by imposing their own conflicting version of a pure system – namely, communal nobility or guild corporatism, respectively – in order politically to destroy their core enemy. Oscillation leads to explosion when the citizenship boundaries around the whole political arrangement gives way, for then mobilization of outsiders substitutes for log-rolling among insiders. Non-economically-active guildsmen and variable lists of magnate families³⁹ were exactly the sort of

³⁷ It does not follow that this was an ‘impartial’ court in the modernist sense of autonomous law, administered professional judges. Both the Mercanzia, for cross-guild commercial disputes, and the guild consuls, for intra-guild commercial disputes, were merchants’ courts, with fellow businessmen standing as judges over disputing businessmen.

³⁸ Modern systems of elections establish elite control not through limiting access to voting rights and citizenship but rather through limiting access to the nomination of professional politicians.

³⁹ The original 1293 list of patrilineages legally declared to be ‘magnate’ could be modified in two ways: (a) passing a law forgiving or adding a new patrilineage to the list, and (b) patrilineage fission, where one

contested ‘grey zone’ boundaries of citizenship that opened the door to such destabilizing mobilization. In brief, this was the self-destruction scenario that eventually led up to the Ciompi revolt (Brucker 1962). The particular form of this transformative revolt, I argue, was latently contained within the vulnerabilities of the hybrid system of control it overturned.

Interlude of destruction: bank bankruptcies, plague, and the Ciompi revolt

Florentine history did not move inexorably from one spectacular organizational genesis to another. Before even the Ciompi revolt in 1378, the Florentine political economy suffered two severe blows one quickly after the other in the 1340s: (1) a wave of bankruptcies in 1342 swept away the “big three” cornerstones of Florentine international merchant-banking (namely, the Bardi, the Peruzzi, and the Acciaiuoli banks), and (2) the Black Death of 1348 killed an astonishing 60% of the population of Florence. The Black Death has to be considered an exogenous event, like meteors in earthly evolution. But the bank bankruptcies were less exogenous: This event was really reliance on risky state finance come home to roost. Outright refusal to repay first by the French king in the early 1300s (Housman) and then by the English king in 1342 (Sapori) triggered runs on both Florentine and Sienese merchant-banks, which brought down most of them.⁴⁰ Defensive shields of economic diversification, while in place, were overwhelmed by the misbehavior by such huge debtors. Without control over English customs, moreover, the dominance of Florence over high-end woolen-textile production in Europe no longer remained secure.

Back on the Florentine home front, there were political as well as economic reverberations from these bankruptcies. In the short run process of their bankruptcies, these failing banks switched political sides to ally with magnates in an attempted coup (under the recruited lead of a militarized outsider, the Duke of Athens), in order to compel the Florentine state to bail them out. This short-lived coup triggered a violent counter-reaction by the remaining popolani-guild alliance in 1343 to barely defeat it. As might be expected, social class hostility was even more intense after this aborted coup, for the first time inscribing itself behaviorally in decreased rates of intermarriage between popolani and magnates, much less new men and magnates (Padgett). In the medium political term, these bankruptcies weakened the crucial broker position of the popolani within early Florentine republicanism, both in the Priorate and in the Mercanzia.

On the economic side, these dramatic bankruptcies did not mean the end of the patrilineage merchant-bank, in part because papal finance still remained as an anchor.⁴¹ But clearly much economic space opened up, both by this event directly and even more

branch of the old magnate patrilineage hived off to declare its independence from the stem and to petition the Priorate for political inclusion.

⁴⁰ The first of these runs decimated Sienese banks (E. English) but only injured Florentine banks (Najeny’s dissertation), an asymmetry that led to Florence permanently surpassing Siena in the economic competition within Tuscany over international merchant-banking.

⁴¹ For example, the Alberti *antichi* and the Soderini (Renouard).

so by the brutal Black Death that swept all over Europe, destroying everything including economic organizations in its path. It is very surprising that the Black Death did not have more of a direct effect on Florentine business organizational form than it did, for new economic companies sprang up almost immediately to take the place of those deceased, built out of the same organizational practices that were used before the plague.⁴² Ratios changed however. Large patrilineal merchant-banks were fewer, and smaller companies constructed along classic master-apprentice guild lines were proportionately more frequent than before. Hence firm-size distributions became deconcentrated.⁴³ Popolani major-guildsmen as a class were still on top of this modified economic system, only now they were more likely to reach out to make economic-company partners with talented quasi- or ex-apprentice youngsters from diverse social-class backgrounds than they were with their kin. Such guild-style partnerships were an engine of economic mobility for ‘new men’, who rose rapidly after the plague, as did laborers all over Europe. In this sense, the guild-corporatist political framework still in place after the aborted coup fed back to modify the frequency distribution of (but not radically recreate) the existing economic structure, once the twin crises of bankruptcy and plague had blasted away the dominance of the previous patrilineage organizational form.

With the weakening of the political brokerage role of patrilineage merchant-banks, the vulnerability scenario described above started to play out.⁴⁴ Magnates with their popolani sympathizers were economically down, and guilds with their popolani sympathizers were economically up. But that did not mean that conservatives were ready to turn over the political store to guild corporatism. Indeed popolani conservatives took advantage of the confusion and disorganization of the immediate aftermath of the 1348 plague to consolidate their own constitutional hold on political power. Political and economic power were no longer in synch. In this context of weakened elite control, all sorts of contradictory political cleavages percolated up in a confusing *mélange*: the classic patrilineal factionalism of Albizzi versus Ricci, the anachronistic foreign policy of Guelf versus Ghibelline, the social-class politics of magnates versus popolani versus new men, and the guild-corporatist politics of major versus minor guilds. This nasty pot was then stirred by the politics of citizenship, for the ‘greedy incentive’ reason described above. Soon conservatives (mostly the Albizzi faction in alliance with the *Parte Guelfa*) began to demand, in McCarthyite fashion, that their liberal guildsmen opponents be proscribed from holding public office because they were ‘Ghibellines’. And liberals counter-attacked by demanding that their conservative opponents likewise be proscribed from the state as newly declared ‘magnates’. This escalation, made possible by too many cleavages, came to a head in the so-called “War of Eight Saints” with the Pope in 1375. Driven partly by domestic considerations, radicalized liberals sought to pierce the boil of Guelfism forever by striking at the heart of the internationalized patrilineage structure that had built Florence. The pope retaliated with spiritual interdict and trade boycott, temporarily ruining Florence’s international trade (Trexler).

⁴² [cite my cambio bank data]

⁴³ [cite other cambio bank data]

⁴⁴ This paragraph draws heavily on Brucker (1962).

All hell broke out at this point, leading eventually to the Ciompi revolt in 1378. Details of this searing event are well recounted elsewhere (Brucker, Cohn, Stella, Trexler). Suffice it to say here that the liberal alliance of guilds and Ricci faction temporarily offered, but then was forced to retract, citizenship rights to lower-class ‘proletarian’ wool workers (*ciompi*) and other *popolo minuto* through the creation of three new minor (but large in population) guilds. In the context of total breakdown in normal politics within state institutions, infuriated *ciompi*, many of whom were ex-soldiers, took to the streets, with some of their radicalized popolani and minor-guild supporters, to torch conservative tower-houses,⁴⁵ to exile conservative their Albizzi-*Parte Guelfa* opponents, and to declare what we would call a workers’ state. This lasted for two months. In response, most normal businessmen fled the city in fear for their lives and livelihoods, thereby pushing the Florentine economy from ruin to collapse. Eventually this revolt of the *ciompi* and artisans was repressed in three stages and order restored, but that is the subject of the next section.

These three waves of destruction in mid-fourteenth-century Florentine history were not themselves processes of organizational genesis, the subject of this paper. But given these dramatically turbulent realities, it worth a moment to reflect on the causal connection between destruction and genesis in this history, in part because Schumpeter (19xx) and others draw a tighter linkage between these two processes than we are inclined to do. Crises first weakened and then eventually destroyed the regulatory institutions set up to manage volatile politics. Destruction alone, however, creates only destruction.⁴⁶ It is the volatile networks being regulated by those institutions that need to be analyzed in order to understand the dynamic trajectories of system tipping. Given reinforcing feedbacks, multiple-network ensembles have small numbers of ways to break down and hence small numbers of ways to recompose. Path-dependent ‘topologies of the possible’ in history do not imply teleological determinism, but they do imply branching envelopes of ‘reachable’ evolution latent in current structures. Utopian visions that do not attend carefully and contextually to these branching structures of dynamic reachability are doomed only to destruction, not to the genesis they falsely proclaim.

Transposition and Refunctionality: the invention of partnership systems and the institutionalization of political clientage⁴⁷

The previous sections have been synthetic overviews of secondary literatures on the political and economic history of late-medieval Florence. The next two sections on Renaissance Florence are based on primary research: Padgett and McLean (2006) and Padgett and Ansell (1993), respectively.

The Ciompi revolt was repressed in three stages: the guild regime of 1378-1382, dominated for the most part by minor-guildsmen; the moderate regime of 1382-1393,

⁴⁵ And even those of few liberal patrilineages, by accident.

⁴⁶ I am no Arnold Toynbee.

⁴⁷ This section summarizes and extends Padgett and McLean (2006) and Padgett and McLean (forthcoming).

dominated for the most part by merchants; and the ‘oligarchic’ regime of 1393-1433, led by Maso degli Albizzi. The first two of these stages occurred through street action, the third through purges, so these were all violent episodes. The organizational invention of the economic partnership system, which replaced patrilineage merchant-banks as the dominant business structure in Florence controlling international finance and trade, was associated with the second stage of this political repression and reorganization. The settling down and social integration⁴⁸ of the partnership system into ‘oligarchical’ elite networks was associated with the third stage.

The partnership system was an historically unprecedented new form of economic organization, which largely solved the financial-risk problems that had bedeviled the patrilineage merchant-bank. As its name implies, the partnership system was not a single partnership or company. It was a set of legally separate partnerships or companies tied together through one individual (or through one ‘holding company’ small clique of individuals). This senior partner signed multiple partnership contracts with various junior-partner branch managers in all of his ownership-linked companies. Each company kept its own set of account books, with current-accounts recorded in bilateral double-entry accounting used to manage complex cross-company trading and financial flows.⁴⁹ Usually the companies so linked were specialized in separate industries and/or geographical centers, without competition among themselves, and they often utilized a *cambio* bank resident in Florence to function as administrative ‘headquarters’.⁵⁰ Compared to their larger unitary patrilineage-merchant-bank predecessors, the partnership system represented legal devolution, since branch companies thereafter operated autonomously, albeit within explicit policy guidelines from the center. But operationally the partnership system increased centralization, since the senior partner back in Florence financially monitored and controlled his ‘investment’ through sophisticated accounting and frequent letters,⁵¹ without requiring authorization by a large committee of partners. Legal devolution solved the financial risk problem within the constraints of unlimited liability⁵² because, even though the senior partners’ personal assets were still contractually liable in the case of business failure, the assets of each branch company were protected from the bankruptcy of other branches.⁵³

The partnership system was not only an invention at the level of organizational form. It also triggered a giant leap forward at the level of markets. Inter-company credit and liquidity exploded with the diffusion of the partnership system, as current-account business techniques used for transfer among branches spread to link sets of partnership

⁴⁸ This was called “catalysis” in Padgett and McLean (2006).

⁴⁹ The “visible hand,” if you will, to borrow the telling phrase of Alfred Chandler.

⁵⁰ For example the famous Medici “bank” was not a unitary company. It was a partnership-system agglomeration of the following legally separate companies: . . .

⁵¹ Florentine senior partners ran their companies not dissimilarly from the way that venture capitalists do today.

⁵² *Accomondite* contracts not until 1411. . . , and even then not heavily used until 1500s.

⁵³ And this in turn can lead to ‘sheltering’ of personal assets as well. The clever transfer by Cosimo de’ Medici of his financial assets from Florence to Venice right before his impending exile in 1433, through which his opponents intended in classic medieval fashion to expropriate his wealth, illustrates potential political consequences of this improved economic liquidity (Kent).

systems and then companies more broadly, as long as those companies' partners were personally acceptable to each other and to senior partners at the center of the entire system. By 1427, liquidity among banks and merchant-banks reached leverage ratios of five and six to one (Padgett and McLean, forthcoming). Autocatalytically economic markets took off as markets qua markets, not just as extensions of patrilineages or guilds. All this made Florentine merchant-banking into an interdependent and cooperative credit system, capable of dominating international banking all over western Europe.

Given the obvious (in hindsight) economic benefit of the partnership system and its inter-company credit derivatives, the historical question is why the economically advanced Florentines took 40 years, namely 1342 to 1382, to come up with this original and path-breaking organizational idea.⁵⁴

As described and demonstrated in detail in Padgett and McLean (2006), the partnership system was invented as an unintentional byproduct⁵⁵ of repressing the Ciompi revolt, through means of political cooptation of domestic *cambio* bankers by the leaders of the 1382-93 moderate regime. Politically moderate major guildsmen, who originally had seized power from minor guildsmen through the streets, needed to consolidate their fragile hold on power by building a centrist coalition to oppose and to protect themselves against both polarized extremes – the *ciompi* and radicalized minor guildsmen on the left and reactionary *Parte Guelfa* popolani and magnates on the right. More ambitiously, they sought to rebuild the fractured Florentine economy and to reestablish political order, eliminating all future threats of revolution or coup.

Basically what these brave but desperate moderate major-guildsmen did was to dismantle the guild-corporatist constitutional framework that was the legal basis for their own power. Dismantling the guild-corporatist political system meant (a) eliminating guilds from nominating their own candidates for election to the Priorate, and (b) subjecting guilds' internal elections of their own consular leaders to the centralized scrutiny and approval of the Mercanzia. Simultaneously with this permanent expulsion of the principles of guild corporatism from Florentine constitutional history, the moderates also recruited into republican city councils and *balie* a selected large majority of other major guildsmen who sympathized with their moderate “let's get back to business” aims. Their procedural innovation was to re-recruit (most of) the old elite back on a new basis – no longer corporately as “major guildsmen” but rather individualistically as sympathetic businessmen and citizens (see Najemy 1982, pp. xx). Compared to the old patrilineal international merchant-bankers, previously on top, domestic *cambio* bankers benefited disproportionately from this new co-optation procedure because they disproportionately had been neutral in the Ciompi and pre-Ciompi struggles (Padgett and McLean 2006, pp. xx).

⁵⁴ This 40-year time gap is my empirical answer to functionalist alternative hypotheses. . . . As biologists know already, processes of genesis are not the same as processes of selection, even though in evolution they operate in tandem.

⁵⁵ For more on “byproduct causality” see Elster (sour grapes).

Why would the moderate leaders of the 1382-93 regime engineer such a drastic constitutional reform? (1) Because institutions designed for elite control had been hijacked for exactly the opposite purpose. The guild-corporatist system had opened the door, indeed given an incentive, to the *popolo minuto* to revolt, through demanding their own guilds.⁵⁶ That door to revolution from below had to be closed forever. And (2) because corporate representation became unreliable as a procedure for making sure that the ‘right’ leaders would come to the fore. Corporate bodies had heterogeneous political interests within them, which could pop up unpredictably in tumultuous times, as events had just demonstrated. A more discriminating election procedure needed to be found, to make sure that people voluntarily chose leaders who were ‘politically correct’, from the elitist perspective. Eventually clientage became that procedure, but first let me finish the partnership-system genesis story.

Cambio bankers in large numbers were co-opted into the leading councils of the state and then in effect told (or told themselves): “go rebuild our international trading economy.” Many ex-international-merchant-bankers were ruled out for this task for reasons of political unreliability, which in part their patrilineage roots had sucked them into. Accustomed to their cozy domestic world of deposit banking on the *piazza* with their fellow Florentines,⁵⁷ this was quite a promotion, and a challenge. To fill this important economic vacuum, Florentine *cambio* bankers did what one might expect local domestic bankers to do: they applied their old *cambio*-guild techniques, which they already knew how to do, to their new environment. In the language of Padgett and McLean (2006), they **transposed** an organizational technique from one domain to another, applying the old technique to a new purpose or **new function**.⁵⁸

One of these *cambio*-guild techniques was partnership. Partnerships in the guild world were short-term (often three year) contracts between an older master and one or more younger journeymen, often ex-apprentices. The older, more experienced man would put up most of the capital and contacts, giving the younger man a slightly higher share of the profits than his capital contribution warranted, in exchange for more labor. If business was profitable, then the younger man would soon have enough capital to go out and start his own company, reinitiating the cycle. From the guild perspective, therefore, the partnership system was simply an application of this old partnership-contract method, not sequentially, but to many partnerships simultaneously. The Priorate told *cambio* bankers to go out and do this all over Europe, and they did, with one junior branch-manager in every major European city in which they chose to do business. For such an important job, so far away, soon branch managers could not be so young any more. But with that modification, the partnership-system contract between a senior-partner and his branch-

⁵⁶ Not unlike the phrase “all men are created equal” opening the door to all sorts of people that our founding fathers did not have in mind.

⁵⁷ The English word bank stems from the Italian word *banco*, which means table or *tavola*. The image is of individual bankers sitting behind their tables, arranged around the edges of a public square, with their bags of coins and account books next to them. Their job was to change coins of various currencies but also to hold deposits for customers in order to pay their bills upon verbal authorization, often through other *cambio* bankers across the square. The medieval version of electronic transfer.

⁵⁸ Padgett and McLean (2006) made the argument that in general innovations are as frequently old techniques for new purposes as they are new techniques for old purposes.

manager junior partner had the same legal form as the guild-partnership contract between a master and his quasi-apprentice. Except now this applied in the wealthy international trading domain of the old patrilineage merchant-bankers.

The destruction of guild corporatism politically not only triggered directly this partnership-system invention through the mechanism of political co-optation, but also it removed regulatory barriers against it. The industrial specialization that the guild system reified was not an airtight barrier against businessmen operating in more than one industry, because businessmen could be members of more than one guild. But it, and the whole master-apprentice training method that undergirded it, mitigated against industrial fluidity. But with the *Arte della Calimala*, guild of international merchant-bankers, and the *Arte del Cambio*, guild of domestic bankers, effectively vanquished for all but administrative purposes, barriers against combining organizations in these two industries vanished. Indeed barriers against combining organizations in any two industries vanished. Partnership systems were freed up flexibly to span, in modular network fashion, not just European cities but Florentine industries as well, including wool and silk manufacturing as well as cambio banking and international merchant-banking.

Reflecting their economic success at the centers of these new partnership systems, cambio bankers gradually became absorbed socially into the political elite as well, over the course of 1382-1400. Rates of intermarriage between successful cambio bankers and popolani wives were high, whether or not cambio bankers came from popolani families. The percentage of cambio bankers themselves with popolani social-class backgrounds gradually climbed over the late fourteenth century, turning cambio banking into even more of a socially elite affair than it had been before.⁵⁹ The multiplex overlay or correlation between cambio-banking partnership and intermarriage, at the close level of the two partners' nuclear families also increased, which had very practical consequences when dowries were used for startup capital, revealingly called *corpo*.⁶⁰ In-law also became a metaphor for elite partnership. Through these network blendings of economic partnership and intermarriage, especially after 1393, partnership systems gained a secondary function as one more network tying together and integration the social elite, in addition to their primary function in tying together markets. This process of social absorption was given label "catalysis" in Padgett and McLean (2006) to reflect the positive feedback that economic partnership systems and elite social networks reinforced each others' reproduction. Partnership systems thereby played their role as one social network in the crystallization of a republican 'oligarchy' during the Albizzi regime (Molho, Baron), giving it wealth and the cohesion to transcend the intra-elite turmoil of the previous period.

Although not explicitly discussed in Padgett and McLean (2006), I now also believe that transposition and refunctionality of guild techniques occurred in a second organizational area as well – the **transposition** and **refunctionality** of guild-based

⁵⁹ The old deposit bankers in the piazza did not go away. They simply became dwarfed within the industry by the much richer partnership systems that emerged, which made their domestic branches available to wealthier customers. Cambio banking as an industry internally became economically and socially stratified.

⁶⁰ Again, documentation for all of these facts is contained in Padgett and McLean (2006).

economic credit into political patronage. My hypothesis is that economic credit techniques, developed originally among guildsmen in their cozy neighborhood world of the *piazza*, were released from their institutional moorings with the abolition of guild corporatism to be blended with other sociality relations to be found in the neighborhood. Or to describe this relational blend the opposite way, sociality in the neighborhood became infused with the more explicit accounting typical of economic credit among guildsmen. It would be hard to maintain that political patronage never existed in Florence until the Ciompi revolt (although see Lansing),⁶¹ but there was a dramatic expansion and systematization of clientage during the post-Ciompi Albizzi regime (Brucker). To the extent that pre-Ciompi economic credit among guild companies and post-Ciompi political favors among patrons and clients both operated within the social matrix of neighborhood,⁶² there is face-value plausibility in my hypothesis, even though it needs more research to confirm.

In partnership systems, in marriage, in neighborhood sociality, in political clientage, in diverse social networks in Renaissance Florence, the relational *lingua franca* became credit – namely, the gift of a favor now for repayment in the future. In the guild system, merchant credit had been embedded in and backed up by the communal solidarity of the occupation and the *piazza*, legally reinforced through guild corporatism. After the abolition of this legal link between guilds and republicanism, credit in both economic and political domains became more personalized.⁶³ Instead of investing in each other through the standardized medium of their corporate identities, merchants and politicians invested in each other directly and more individualistically. In a sense, this is a generalization and diffusion of what was going on in more concentrated form within partnership systems – namely, investment by social and economic elites in the prosperity and mobility of subordinate branch-manager protégés. With the dismantling of corporate institutional superstructure, personalism in exchange, even more than before, spilled over tidy role barriers between economic, political and social relations.⁶⁴ The aggregation of these interconnected trends implies that intra-neighborhood political and economic credit substituted for intra-neighborhood economic partnership as the core social-network integuments binding the social classes of popolani and new men, after the Ciompi revolt.

This blending of unanchored guild techniques into the other social networks of ex-major-guildsmen explains the particular forms of the organizational geneses they engineered. But none of this creative invention would have occurred had those other social networks not been primed to receive them. The same Ciompi revolt at the root of everything, however, generated a collective focusing of the collective mind of the Florentine elite not to be underemphasized. No doubt this downright fear would have been transient had it not been institutionalized into reproducing networks. But class challenge from below induced the politicization of elite marriage in response. Ever since

⁶¹ Indeed it would be hard to make such a statement systematically precise.

⁶² Although further research is needed, there is good evidence for both of these empirical claims: [Alberti cambio data, plus much else]

⁶³ For documentation of the personalized character of inter-company economic credit in Florence in the early fifteenth century, see Padgett and McLean (forthcoming).

⁶⁴ Granovetter's terminology of "social embeddedness" therefore unintentionally prioritizes the 'core' economic over the 'regulatory' social, whereas here all motivations are intermixed without prioritization.

1342, magnates and new men definitely had not intermarried, but the popolani had intermarried with them both (Padgett 1994). Politicization of marriage, therefore, had the unintended consequence of mitigating both the social-class fracture on the ‘right’ between magnates and popolani, and organizational rivalries among federated major guilds on the ‘left’. Dissolving guilds, therefore, met consolidated marriage networks to receive and to use their organizing techniques. An oligarchic core, defined and bound together through marriage, controlled the rest of the society via co-optation and ‘open’ access to itself, via partnership systems, economic credit, and patronage. After all the various mid-century crises had finally settled, popolani families collectively remained in political and economic control as before the 1340s, but now through the individualizing social means of marriages, partnership systems and patronage rather than through the corporate social means of patrilineages and guilds.

To conclude this ramifying story of profound transformation among multiple Florentine social networks in causal feedback, a few words about the consequences for basal patrilineage family structure in Florence are in order. All along, “patrilineage” had included cross-cutting marriage (with dowry) in its social-network definition, as well as its core masculine descent relations. It even had included servants in its tax definition of household. With the increased politicization of marriage and patron-clientage, patrilineage as a family structure was not destroyed, but it was loosened. More internal differentiation between lead and cadet branches evolved, with patrilineage boundaries bleeding over into the fictive-kinship ‘grey zone’ of especially strong clientage. While patrilineage structure among the classic older popolani families was thus loosening, however, mimicry by lower-class families of their status-superiors’ family system intensified. Official election of a new family into the Priorate often legitimated the self-claim by that family to recognition and respect, signified by its adoption of a last name.⁶⁵ Therefore, even though the elite patrilineage family was no longer as cohesive as it had been in medieval *consorteria* times, the patrilineage family form, in watered-down form, diffused more widely than ever in the society as a whole.⁶⁶

At end of the day, the processes described in this section produced no less than a transition from medieval to Renaissance social structure. One feature of this particular transition that made it even more significant, in social-network terms, than the previous two examples of organizational genesis in Florence was the emergence of a new self-sustaining autocatalytic network – namely, clientelism in politics. In the prior organizational-genesis episodes, interference between two overlapping autocatalytic networks, kinship and economic, generated successively more general new organizational forms, first at level of the firm and then at the level of political institutions, in order to stabilize the smooth (albeit transformed) reproduction of each. Now, however, a new network of autocatalytic reproduction was born. For the first time in Florentine history, politics became ‘autonomous’ in the narrow sense of containing its own self-reproducing autocatalytic loop: a topologically extended feedback between favors and votes.

⁶⁵ [give figures on percentage of households with last names in my various tax censuses.]

⁶⁶ This trend accounts for Cohn’s data on wills.

In broad summary, the transposition and refunctionality of guild techniques into blending with select aspects of patrilineage and neighborhood led to the following autocatalytic system tippings: inter-company economic credit in markets, and clientelism in politics, with marriage and fictive kinship in the background as generalized tropes regulating the formation of credit ties in both of these domains. Oligarchy, with controlled channels of co-optation and election into itself, was the institutional result.

Multivocality and Robust action: the rise of the Medici⁶⁷

All this sounds almost too good to be true, especially after the chaos of the mid-fourteenth-century. But what are the structural vulnerabilities of even stable clientage systems? And what trajectories of future co-evolution are built in to these vulnerabilities?

Clientage systems, especially electoral ones, are subject to inflation (Erie). That is, political competition among patrons generates expansion in numbers of clients, perhaps at rates beyond what a state-based flow of favors can support. A crisis of overextension becomes possible, especially when flows of favors are curtailed for some reason. In Florence's case, it was a series of wars that at first strengthened the oligarchy but then ultimately induced crisis within it.

Local wars between Florence and other cities within Tuscany were on the whole good for the growth of the Florentine economy. Any war disrupts trade, a serious short-term cost. But if victorious, Florence could thereby consolidate control over its food supply. And victory triggered the valuable-human-capital immigration flow of defeated local Tuscan elites into economically booming Florence. Clientelism both paved the way for this immigration, and it provided the 'territorial state' means for local-city governance from afar (Connell et al.). Territorial expansion by Florence through its Tuscan *contado* had begun before the Ciompi revolt (Becker), but cohesion and wealth in governing elites gave Florence the organizational capacity to pursue this foreign-policy objective with new vigor, through means of mercenary armies. The biggest Tuscan prize of all, Pisa, fell into Florence's hands in 1406 [*check date*].

There was therefore no contradiction but rather synergy between Florence's post-Ciompi elite network structure and its aggressive 'territorial state' foreign policy. When Florence was the big fish, Tuscan war was in its interest, both collectively as an economy and privately as a set of patrons hungry for spoil. But when Florence was no longer the big fish, problems arose. The bigger fish was Milan: from the 1390s through the 1420s, Milan initiated a series of wars against Florence, in its own northern-Italian territorially expansionist drive to become the capital of something like 'Italy'.⁶⁸ In the short term, even these dangerous military assaults on Florence strengthened the unity and resolve of

⁶⁷ This section summarizes and extends Padgett and Ansell (1993).

⁶⁸ This Milanese territorial objective was not entirely unrealistic, given the preoccupation of its other northern-Italian rivals, Genoa and Venice, with their sea empires. Given those preoccupations with each other, Florence actually was the main barrier to Milan's grand foreign-policy objectives. Had Milan won its wars with Florence, Italy may have come to resemble France and England more than it did.

the Florentine elite. In his justly famous book, Hans Baron (1966) traced the philosophical “rise of civic humanism” in the early 1400s to Florence’s rally-round-the-flag patriotic celebration of its own republican virtues, as compared with the ‘tyranny’ of Milan’s *signoria* form of government.⁶⁹ But these mercenary wars with Milan were enormously expensive (Molho), over time draining even the thriving Florentine economy of its wealth through confiscatory levels of taxation.⁷⁰ It is impressive that Florence generated the fiscal capacity to do what it did in fending off its larger enemy. The public-finance invention of the famous 1427 *catasto* or tax census was a major part of this innovative fiscal response (Herlihy and Klapisch-Zuber). The invention in 1425 [*check date*] of public bonds for dowries was another (Molho on marriage). The incorporation of partnership-system bankers into the state, as *ufficiali dei banci* to provide short-term loans, lucrative for bankers, was a third (old Molho). All of these public-finance innovations built on the credit and liquidity private-economy foundations that the post-Ciompi partnership systems had constructed (Padgett and McLean forthcoming).

Despite all of these independence-saving innovations in public finance, Florence’s own misguided choice of war with its last Tuscan holdout Lucca proved to be the last financial straw. With support from Milan, Lucca defeated Florence in 1430. The 1427 *catasto* had to be redone in 1430 because of all the bankruptcies and patrimony losses that were provoked in the interim by the massive tax squeeze, not just from this latest war but from the entire sequence of wars. The 1430 *catasto* is full of heartfelt, not just strategic, pleas for fiscal mercy due to personal financial collapse.

This threshold behavior of successful absorption by the economy of progressively increasing fiscal strain, but then sudden collapse, is itself worth of note. More research would be useful to confirm it, but this macroeconomic pattern is consistent with a credit bubble being burst – exactly the sort of thing that high-leverage produces (Padgett and McLean forthcoming). In the language of this paper, wars eventually undermined the autocatalytic credit cycles in the economy, which originally had funded those wars.

On the domestic scene, increased fiscal squeeze from wars led to increased demands for reduction in individuals’ tax assessments and for clientage access to patrons to obtain that. The supply side of this became problematic, if defeat in war was to be averted. Clients all over Florence appealed to their local patrons to intervene on their behalves in neighborhood-based tax-assessment committees (Kent). Probably these patrons did what they could to varying degrees, but eventually patrons all over Florence had financial crises of their own. City-wide financial destruction left the Medici as almost the only patron standing with pockets deep enough, because of their papal-banker connections, to sustain normal patron-client behavior. For the same reason, they were also the only patron left to be large state financiers for the Florentine war effort (Molho).

⁶⁹ Practically speaking, this ideological celebration of ‘republicanism’ was also intended to gain Genoa and especially Venice as military allies against Milan. That foreign-policy objective for the most part was not achieved, leaving Florence alone to face its bigger rival.

⁷⁰ Xx has calculated that the wars cost yy times the total GNP of Florence. This indicates two things: (a) really expensive, and (b) much funny business going on with tax collection.

All this is enough to explain contraction and concentration in relative financial power within the oligarchy. Organizational genesis is not just that, however. It is transforming a temporary advantage into a launching pad for making something new. This ‘something new’ was the birth of a coordinated patronage political machine or party, with the consequence of centralizing the Florentine ‘republican’⁷¹ state.

The centralized Medici party was composed not just of client neighbors from the quarter of San Giovanni, many of whom were closely connected economically to the Medici ‘bank’ or partnership system. The Medici party was composed equally of marginal popolani oligarchs, from the rest of Florence (especially the quarter of Santo Spirito), with whom the Medici had intermarried frequently. Even though the Medici were at the center of Florentine economic networks, because of their powerful partnership system, they were on the margins of oligarchic marriage networks, because of the political history of their family during the Ciompi revolt.⁷² These two halves of the Medici party, conjoined only through the Medici family itself, were in no way consistent with each other either socially or politically, especially in the context of the wars which had seriously exacerbated class tensions because of fiscal strain. Indeed deep internal cleavage obtained. For the clientage half of their party, the Medici received the appellation, really the insult, of “heroes of the new men” by their oligarchic republican opponents. But the personal class identity of the Medici as conservative popolani, deeply rooted in traditional Florentine history, was never in doubt. Such internally contradictory identities and interests underlay the sphinx-like leadership style of Cosimo de’ Medici, which reflected a centralized **multivocal** political organization whose policy preferences were always ambiguous.

The financially hard-put oligarch opponents to the Medici led by Rinaldo degli Albizzi, on the other hand, were constructed out of overlapping multiplex network ties among themselves. This alternative organizational structure was the historical residue of the post-Ciompi elite network itself – namely, an expansive oligarchy with multiplexity at its core and network differentiation only in the periphery. It’s just that the clientage periphery had been shredded by wars, leaving only the oligarchic core, now less open to incorporating outsiders than before. Having lost its legitimating lifeblood of social and political co-optation, the oligarchic core became vulnerable to re-interpretation of its motivations by outsiders – from public-minded ‘citizens of the state’, acting in the collective interest of all, to a class-homogeneous clique of elite conspirators, manipulating state policy out of self-interested lust for money and power. The class-

⁷¹ ‘Republican’ now is in quotes because opinions at the time and thereafter have differed about whether the centralized Medicean regime remained a republic or not. On the one hand, all republican councils were preserved. On the other hand, those councils no longer made important state-policy decisions anymore; they only ratified decisions made offstage.

⁷² One patrician leader of the Ciompi revolt had been the firebrand Salvestro d’Alamanno de’ Medici. For this, the Medici family were regarded with deep suspicion as ‘class traitors’ by the victorious oligarchs, despite the more contradictory Ciompi-revolt political behavior of Vieri di Cambio de’ Medici – one of the simultaneous inventors of the partnership system. This suspicion inhibited intermarriage between the Medici and the victors, even though the Medici as papal bankers otherwise would have been very high status as marriage material.

heterogeneous Medicean partisans were really “heroes of the new men” only in contradistinction to their homogeneously popolani opponents.

The economic side of these asymmetric political-party formations is often underappreciated, even in Padgett and Ansell (1993). The Medici partnership system itself epitomized the glorious system of international finance constructed in the post-Ciampi period. Yet many of the Medici banks’ competitors had gone bankrupt during the credit crunch of 1430. In addition, a masterful macroeconomic accomplishment of the Albizzi regime had been their successful sponsorship of the early development of a Florentine silk-textile manufacturing industry, partially to replace the Florentine woolen-textile industry in decline.⁷³ Being composed largely of new men, silk-manufacturing merchants tended to support the Medici cause (Padgett and McLean, forthcoming), once factional strife emerged around them. This accelerated an ongoing migration of economic autocatalytic cycles from the oligarchic core of popolani republicans to the Medici party-state, begun in the 1430s period of Medici party formation but consolidated in the victorious Medici regime itself.

Robust action was the processual mechanism of this transition from oligarchic republicanism to centralized party-state. Robust action is positional chess. On the one hand, robust action, like positional chess, defensively sets up a heterogeneous array of cross-cutting supporters with no specific tactical objectives other than the function⁷⁴ of generating and preserving centrally-controlled flexibility in options against unpredictable hostilities. On the other hand, robust action, again like position chess, offensively aims to squeeze opponents’ freedom of maneuver down ultimately to only one line of action, which can be anticipated and defeated. The details of this Albizzi-Medici struggle, which led to victory for Cosimo de’ Medici in 1434, are described in Padgett and Ansell (1993). Suffice it to say here that Cosimo de’ Medici, through his contradictory-network support structure, maneuvered his opponents into taking the first aggressively illegitimate move, toward coup, thereby placing himself in the attributed position of “protector of the republican state” in the eyes of neutral bystanders.

Upon his death, Cosimo de’ Medici legally was declared *pater patriae* or “father of his country”, not unlike our own American “whig charisma” celebration of George Washington (Schwartz). Whereas republican oligarchs had been “public citizens of state” transcending their previous corporate affiliations through ‘selfless’ service to the state in elected office, Cosimo de’ Medici became ‘first citizen’ or ‘father’ of the Florentine state, concentrating in his person a judge-like, above-the-fray image of impartial sagacity. Cosimo did not (directly) order others around or even talk much. He let others come to

⁷³ After the English king had evicted Florentines from management of his customs, he sponsored the development of a domestic English woolen-textile manufacturing industry, using the same high-quality English wool as had previously been shipped to Florence. By the Albizzi period, this competing industry had developed into a very serious international competitor. The interruption of the War of Eight Saints had proved useful for England to develop wool-merchant distributional networks of its own.

⁷⁴ I do not use the word ‘purpose’ here, because robust-action systems may or may not have emerged through means of intentional human design. In the case of Cosimo de’ Medici, the network structure of his party did not emerge through his own design, but he had the perspicacity to recognize its power once it developed around him.

him to plead for advice, and then responded (if he did at all) through the unattributed and causally murky actions of his agents.

The structural foundation for such ‘impartial’ brokerage behavior is fragmentation in underlying networks, forcing others to go through the central node holding the system together in order to reach each other. Through the unprecedented number of opponents he exiled in 1434, Cosimo de’ Medici overnight ripped the heart out of the previously cohesive republican core. A more centralized version of political and economic clientage maintained itself through its agonistic social foundation of personal rivalry and suspicion⁷⁵ (cf. Wiseman). Later in the fifteenth century, Lorenzo incrementally modified this inherited Medici system of centralized brokerage for the worse, by closing in Cosimo’s expansive and outward-looking marriage policy into a self-absorbed ‘court’ (Padgett 1994). But republican appearances notwithstanding (Rubinstein), either way the Medici strove to place themselves above the city by metaphorically embodying the city, in the classic hieratic (Dumont) cultural style of liberality and *magnificenza*.

I arbitrarily stop my Florentine history here without meaning to imply either that Florentine history itself stopped or that the Medici were the *telos* toward which all Florentine history tended. This is simply the time period I know. Organizational genesis continued, though the more historically consequential scenes of economic invention in Europe shifted hereafter to Amsterdam and London. In any event, enough Florentine material is now on the plate to justify pulling together some theoretical lessons about multiple-network processes of organizational genesis that have been learned from this one unusually fertile case.

Modularity and beyond: careers and emergent goals

Underneath both the classical Darwinian natural-selection theory of evolution and the classical microeconomic theory of rational action lies an assumed primordial reality of modularity and of objects. Atoms within molecules; molecules within cells; cells within organs; organs within organisms; people within organizations; organizations within markets; etc. One picks one’s level of analysis; objects appear; analysis consists of understanding the “collective action problem,” in which aggregate behavior of some sort or other is derived from interaction among hypothesized behaviors of these unitary objects.⁷⁶ Processual thinking, which focuses primarily on relations and on transformations, is marginalized in this classical ontology.⁷⁷ The questions of where objects come from, and indeed of where hierarchical levels come from, remain backgrounded, out of analytic vision. It is no accident that both traditional evolutionism

⁷⁵ In dialogue with Machiavelli, the chronic distrust that pervaded the Medici regime was astutely analyzed discussed by Guicciardini ().

⁷⁶ Simon (1968) lays out abstractly this classical hierarchical ontology, which he calls “nearly decomposable systems,” with his usual clarity and insightfulness.

⁷⁷ Of course quantum mechanics challenges this classical ontology at its very lowest level.

and neoclassical microeconomics have had difficulty with questions of genesis.⁷⁸ Deep assumptions about the taken-for-granted object nature of reality stand in the way.

The solution to this theoretical roadblock is not, in my opinion, to go to the nihilistic opposite extreme of inter-textual post-modernism. Specified precisely, as Simon (1968) does, “objects” – namely, densely interacting sets of elements, whose aggregate relation with the rest of the ‘loosely coupled’ system can be represented by sufficient statistics – are real.⁷⁹ They are just not as universal as our theories tend to presume. There is a widespread cognitive bias in humans, for whatever reason, toward perceiving the world as objects arrayed into hierarchies, even when this perceptual lens systematically misleads us. The way to transcend our own cognitive limits is actually very simple – namely, to examine carefully and to measure precisely empirical networks of interaction and transformation directly, without presuming ahead of time coherent objects, actors, and the like. Perhaps the interaction and transformation data will reveal those; perhaps it will not.

Simon’s evolutionary hypothesis is that hierarchical architectures of object coherence, if they are found, will lead to a dynamic of equilibrium convergence and stasis – in other words, to conservation of the past, but not to evolution into the future. Wagner and Altenberg () modify Simon’s hypothesis about the dynamic consequences of modularity to permit slow, incremental change only. Neither Simon nor Wagner and Altenberg explore the dynamic consequences of non-modularity, but the converse of their arguments would be that non-modular structures of interaction generate greater capacity for malleability and adaptability (not always or even usually beneficial). In part this greater flexibility is almost a mathematical tautology, since in physics it is well known that as discrete-frequency levels of interaction start to blur, causal feedbacks across those temporal levels of analysis increasingly induce wild, perhaps even chaotic, dynamics in the linked ensemble.⁸⁰ This is hardly an inevitable outcome, but it becomes more likely than with sharp separation of time scales.

With such abstract evolutionary issues in the background, the purpose of this chapter has been to plumb Florentine history to find social processes of organizational genesis, within this book’s domain of “market emergence and transformation.” What was found empirically was not really autonomous “evolution of markets,” in isolation from other social networks of the time. What was found instead was a co-evolution of states and markets, in network feedback with each other. Florentine organizational genesis, both economic and political, was induced through various mechanisms of combining or splitting autocatalytically reproducing product flows and cycles – the flows in question being economic production flows, financial and credit flows, kinship flows of people

⁷⁸ See Buss () for a sophisticated attempt to solve the biological problem of organism genesis within hierarchical constraints.

⁷⁹ ‘Objects’ in Simon’s sense of “nearly decomposable systems” are recognizable to social network analysts as cliques, perhaps linked together loosely through ‘weak ties’, as in Granovetter (). My point is not that systems of cliques-linked-through-weak-ties do not exist. It is that many other network systems of interaction also exist, not so easily represented within Simon’s nearly-decomposable class of models.

⁸⁰ The physics literature refers to separation of time scales, whereas here I have been dealing with separations of multiple networks. But the underlying interaction-feedback mathematics would be similar.

between families, and eventually political flows of favors and votes. In this concluding section, I will review the economic-market half of this co-evolution only, focusing this time not on genesis per se, but on the lock-in equilibration and reproduction of each economic system so born. Labeled the ‘catalysis stage’ in Padgett and McLean (2006), processes of reproducing new organizational forms generalize those new forms into new market structures, which in turn alter the rules of their selection.

One of the most important reproductive or lock-in mechanisms for any organizational form, also discussed in Padgett (2004), is careers – the life-course flow of people with their changing skill sets through multiple organizations. At a higher regulatory level of analysis, people themselves are autocatalytic flows among organizations, economic, political and kinship. As is well recognized, the collective structuring of careers is important to the continuing supply of skills that comprise organizational competences. But also, as is somewhat less well recognized, the collective structuring of careers is important to the formation of organizational goals and thereby to patterns of interaction in the market.

People, like organizations, sit astride multiple networks of economic, political and kinship exchange, among others, intercalating those networks and flows. In a very broad sense, each of these exchange networks can be assumed to be oriented toward the objectives of making money, making power, and making babies, respectively. But there are very wide ranges of operationalizing the behavioral and cognitive meanings of these general orientations, which have practical consequences for the structuring of all institutions, including markets. Just within the economic orientation of making money, there is variation in the product and occupational domains (both across individual specializations and across diversified mixes) within which money is made; there is variation in money as an end goal (all-out maximization) versus money as a means (looking to make a good life); there are variations in time horizons and in risk propensities; there is the variation of selfishness versus reciprocity versus altruism; there is variation in the nature of causal linkages among making money, making power and making babies. Market systems look and operate very different depending upon how they are situated within these spaces of motivational variation.

Motivations, however, aren’t given exogenously by God. People, just like products and chemicals, flow through organizations and networks of transformation, modifying them enroute. People learn what is valuable in their worlds, as much as they learn information and skills. Autocatalytic networks of reproducing product flow can emerge without consciousness, as biological evolution attests, but even better once an attentive eye has evolved to help keep such products flowing tidily in their transformational channels. Motivational learning through careers and biographies is the social system’s way (not perfect) of keeping that regulatory attention focused on reproduction, and not on destruction.

Careers and biographies structure motivational learning, and thereby system reproduction, through arranging particular sequences and combinations of multiple-network roles. Thereby the object modules that are us, if that is what we are, are

produced through the coordinated interactional work that we perform on each other. Consistently reinforcing career- and biography-paths through multiple roles produce coherent and unitary actors, committed to system maintenance, reproduction and growth. Inconsistent paths or conjunctures produce more creative agents than that, but also more destructive ones as well.

These general points about ‘modularity and beyond’ can be readily illustrated in the various market systems encountered in our tour of late medieval Florence.

In the market system of patrilineal merchant-banks, most fully exemplified in the ‘commercial revolution’ of the late 1200s, the patrilineage family was the master role, indeed the master network, which folded into itself many functions and productive tasks beyond just kinship. To achieve success either in politics or in economics required mastery first of extended-kinship skills and connections. Not surprisingly, businessmen with both biographical origins rooted in and future trajectories for success dependent on the patrilineage created market organizations with economic goals colored by this master network switch, which shaped and controlled their careers. Unlike the short-term-contracting partnerships found in voyage-oriented Venice and Genoa, Tuscan merchant-banks in this era were long-term kinship alliances of sedentary merchants, posted in geographically dispersed branches around Europe. The core economic logic of such merchant-banks was one of patrimony – collectively building up assets to pass down through generations of partners and kinsmen. Business and diplomacy were more risky but also more lucrative means of doing this than land, but the patrilineage ensemble encompassed all of these diversified aspects of ‘patrimony’. Long-term success was hardly assured in this age of fragile trade and war, but long-term time horizons, preferably (but not always) stretched over diverse business activities, were built into the patrilineage mentalité. The capital or *corpo* of these unitary companies accumulated to levels far larger than seen in subsequent economic forms. No labor market of lateral career mobility at level of partners existed; cooperative reliance on credit from hostile competitor family bank was minimized. All this patrilineage embedding created a market structure of intensely competitive system-building: each system wanted to be a cohesive tub on own bottom, trying to secure monopoly control over investor inputs and customer outputs, albeit never really achieving that. Until meteors struck in the form of massive regal defaults, this early market system was self reinforcing: Patrilineage organizational form created a market logic of fierce Darwinian competition, which selected for that organizational form. Patrilineage families kept recruiting patrilineage members to make more patrilineage merchant-banks, the winners of which got wealthier.

Simon’s hierarchical modularity image of nearly decomposable systems fits quite well this early market system in Florence built on patrilineage: nuclear families nested in patrilineal families nested in fortified neighborhoods. Precisely because of this modular ontology, Spencer’s harsh metaphor of survival-of-the-fittest seems to be apt for the period. And with the important rejection of its axiom of impersonality and an appropriate adjustment in assumed motivations, the neoclassical microeconomic model of perfect competition has some relevance as well. But this is the only market system we encountered in Florentine history that possessed this clearly modular ontology of

production flows. That modularity was created by the particular social relationship of father-son inheritance; hence, deemphasize that relationship and apparent modularity dissolves.

The second market system we encountered on our historical tour was the guild system. This was not an evolutionary descendent of the patrilineage market system. Rather the two co-existed side by side in symbiosis: the patrilineage merchant-banks dominating international trade and finance, and the guild companies operating domestically for domestic and export production. Because of guild corporatism, patrilineage merchant-banks were registered in (and often politically dominated major) guilds, but their internal organizational logic was distinct from the majority of their fellow guildsmen. I deemphasize such political overlap and hybridity, discussed above, here in order to focus more sharply on economic market structure per se, even though such an analytic separation does violence to the actual historical record.

As already mentioned, industries organized along guild principles were deconcentrated, with a matriculated population of guild masters constantly forming and reforming many small specialized companies among themselves, through short-term partnership contracts of about three years duration. This deconcentrated industry structure is not the modularity of dense units hierarchically arrayed in nested sets. It is more fluid than that – namely, a constant rearrangement of small standardized parts.⁸¹ The career logic of master-apprentice is what reproduced the guild system’s organizational form, market structure, and economic motivations. The archetypal guild-style economic partnership (with numerous variations and wrinkles) linked an older, experienced master with a younger junior partner in short-term alliance. Junior partner was one step on the orderly career sequence of apprentice to journeyman to junior partner to senior partner, each stage not necessarily attached to the same senior partner. The last stage in the career was a branching fork: senior partners could stay in their role of senior partners throughout their economically productive lives, continuing to sponsor newcomers, or they could graduate to becoming solo operators, free from the encumbrances of other partners.⁸² In contrast to the typical patrilineage economic objective of amassing and consolidating large patrimonies to hand down through generations, this guild career structure induced in the guildsman the sober and somewhat moralistic economic objectives of attaining a good and reliable living for himself and his nuclear family, freed from dependence on untrustworthy authority figures.⁸³

This master-apprentice career structure also had implications for how competitive markets among guild-based companies operated. Because of fluid recombination of partners, one’s ‘competitor’ could easily have been also one’s ex-coworker, somewhat

⁸¹ I exaggerate a little bit to highlight the organizational contrast. In fact, small nuclear families stuck together in economic partnerships within the guild system, but large extended patrilineal families did not.

⁸² Guildsmen of popolani social-class background were more likely to choose the first branch. Guildsmen of new-man and magnate social-class background were more likely to choose the second branch. See Padgett (1994) for more details and pictures of guild career structures.

⁸³ This latter motivation of course created a tension in the export symbiosis of patrilineal merchant-bank and guild producer: merchant bankers wanted to lock-in to themselves a secure stable of producers, whereas guild-based producers wanted to resist this attempted monopsony.

like industrial districts today. Economic cooperation and solidarity among titular ‘competitors’ was built upon this social foundation of fluidly crisscrossing and interlinked careers, among industrially specialized and certifiably bounded eligible participants. ‘Cooperation and solidarity’ were expressed functionally by standardization of products and prices, were expressed geographically by tight clusters of co-working, were expressed administratively by self-policing commercial courts, and were expressed informationally by transparency in technology and accounts. In this sense, the master-apprentice social relationship was the reproductive DNA of guild-style markets, ramifying out into numerous subsidiary consequences through its regulation of autocatalytic production flows.

Both guild and patrilineage economic careers were parts in biographies that included political office as well. Before the Ciompi revolt, businessmen entered or were elected to the state primarily as representatives of their patrilineage or guild. (The consequential complication, discussed above, was the post-1282 set of popoloni merchant-bankers, who represented both orders simultaneously.) Republican political participation reinforced patrilineal or guild identities to the extent that election to office was based on corporate representation. While reinforcing, such political office-holding was not, however, without economic effect. Incorporation into the state (i.e., into the city council, into the commercial court, into guild consuls) imparted to participating businessmen a collectivist perspective about their joint interests that made merchant self-government through merchant judiciaries easier.⁸⁴ In Florentine republicanism, “the law” was not some outside coercive force imposed by a distant monarch. It was elected merchants using their own state to help them regulate themselves.

The third market system we encountered was partnership systems, embedded in social and political oligarchy. In the post-Ciompi “high republican” period, political and economic careers cannot be parsed neatly at all. The biographical end-state of a successful merchant was often to become a respected elder statesman or diplomat. Called in to provide ‘wise’ policy guidance and advice (*consulte e pratiche*) to the city council, just as he did earlier in his career to his own partnership-system branch managers. With such a biographical structure, generalized honor, dignity and gravitas became prime motivators in all aspects of life, including economic (Alberti [1435]). The intelligent pursuit of money and profit certainly remained as important enablers in this cross-role pursuit, indeed almost fixation, on status. But at the highest levels of the society, economic ‘merchant’ was subsumed to a large extent into the more generalized and individualized roles of patron and republican citizen. In this framing, liberality and wisely giving credit were important aspects of being a merchant (Padgett and McLean 2006). In this framing, liberality and wisely giving credit were also important aspects of being a politician. Being a financier and being a political patron both shared the interactional style of taking one step behind the active stage in order to let others do one’s bidding.

⁸⁴ Easier, it should be said, for guilds than for patrilineages – probably because of the non-modular constitution of guilds. State participation did help patrilineages control themselves internally, and political coalitions among patrilineages no doubt had some mutually constraining effect. But coalitional deals among patrilineages were notoriously fragile. Guild-based judiciaries worked better.

Other than making the obvious point of its historical continuity with previous systems, I will not write much here about market structure under the Medici, because I do not yet understand it well. Silk became more central than ever, but beyond that most of the economic action seemed to be in the domain of public finance.⁸⁵ Europe-wide, the next major evolutionary breakthrough in economic organizational genesis after the partnership system was the invention of the joint-stock company, with its associated stock market. This was the transposition of public-finance innovations in the government bond market to the domain of state chartered merchant trading (Padgett's IMT lecture, 2005). The republic of Florence, during the late Albizzi and Medici regimes, was important in developing the public-finance idea and techniques of secondary market trading in government bonds, which paved the way for the joint-stock company. But it was the republic of Amsterdam in the late 1500s that made the decisively inventive transposition, in its imperial pursuit of overseas empire in the East Indies. Important as Florence was in international finance, and important as Venice and Genoa were in international shipping, no Italian city put these two economic-market sides together, as did first Amsterdam and then London in subsequent centuries. In spite of this evolutionary barrier to its own further progress, however, Renaissance Florence in the 1400s did play its part in the original development of the public-finance seeds that later sprouted as the joint-stock company in the soil of other republican cities.

Focusing on reproductive mechanisms like careers, as has been done in this concluding section, tends to turn the structure of analysis into comparative statics, rather than into dynamic genesis, as has been emphasized in previous sections. This is because attention becomes focused primarily on one network, the economic one, extracting it somewhat artificially from its multiple-network ensemble. But this is also what institutionalized reproduction itself does: namely, stabilizing particular transformational sequences of product flow into autocatalytically reproducing networks and channels, buffered it somewhat from other autocatalytically reproducing flows through shared nodes. Analyzing networks one at a time thus pushes us toward a functionalist focus on reproduction, whereas analyzing networks in interaction pushes us toward a dynamic focus on genesis. Both aspects are true and important to a full understanding. But this evolution of both social and intellectual regulation is another reason, in addition to our general human cognitive bias toward perceiving the world as modules, for why our academic division of labor has made it much harder for us to understand evolutionary change than to understand equilibrium optimization. Academic specialization channels our minds into understanding change only as the succession of competitive equilibria among pre-fixed alternatives, rather than as the generation of anything genuinely new. In this way careers mold us toward conformity no less than the Florentines.

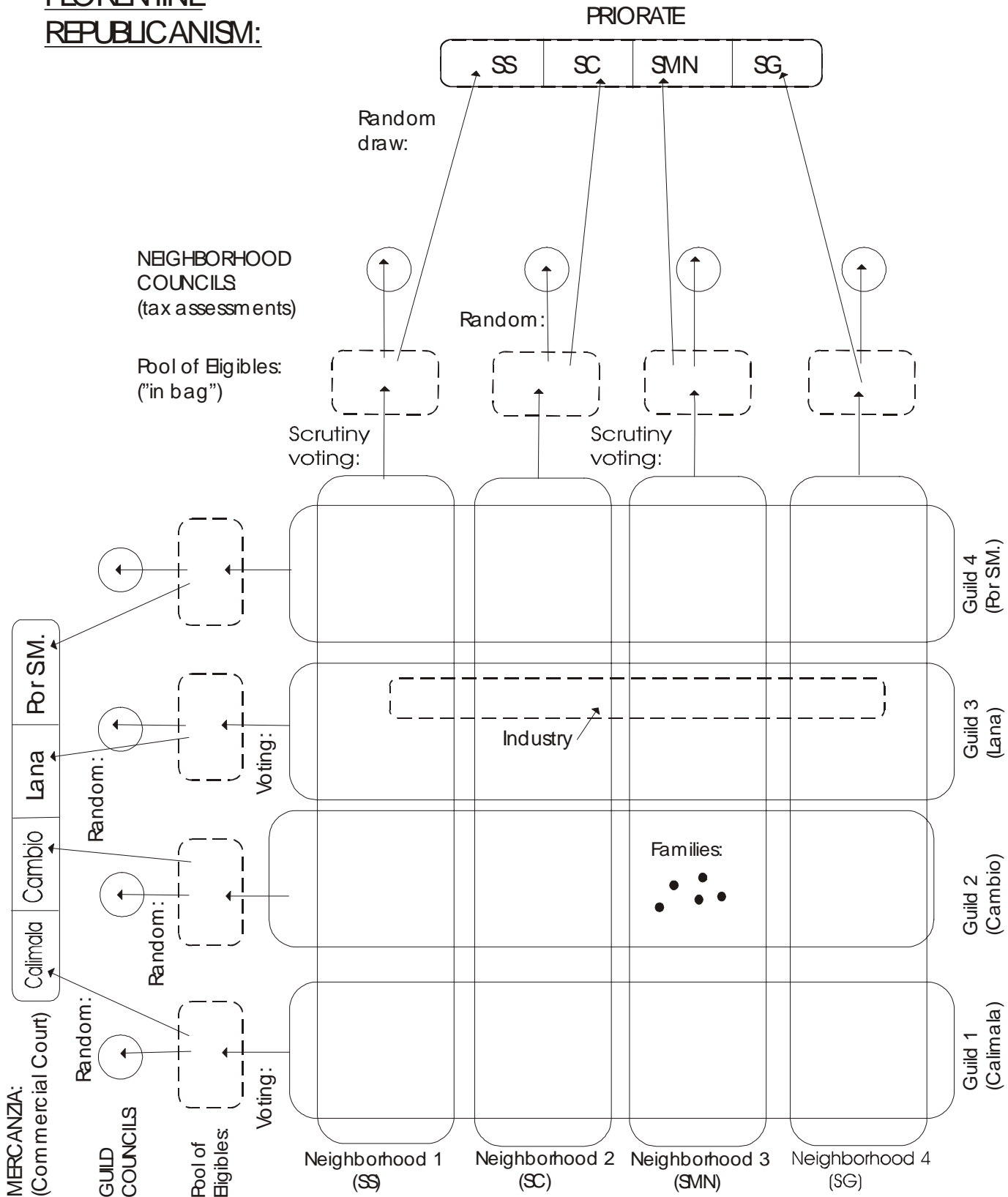
⁸⁵ I leave to one side the contentious Lopez thesis that there was an economic depression at this time of artistic flowering. See Brown () for a useful survey of the debate.

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FLORENTINE
REPUBLICANISM:



Left over notes, not used:

Is story of “first there were self-contained mini-autocatalytic modules and then interdependent specialization away from that” correct for social systems?

2 styles: cliques and s.e.:

First small autocatalytic, embodied & autonomous but for input

Then specialized not longer (less) autocatalytic internally

But what is reason/problem for this? Just density?

Deeper cleavage than the other org-genesis forms: [do a little summary overview of the various four architectures, produced by the 4 processes: (1) incremental modification of nodes, (2) modular absorption, like mitochondria, (3) open multiplex elite, (4) deep cleavage w/ brokered hieratic]

Membership (possibly cross-cutting) versus mobility (cum linear perspective)

In both biological and social systems, it has been common since Simon (1968) to conceptualize the evolutionary emergence of regulation in terms of hierarchical modularity: that is, as “nearly decomposable systems” of (almost) self-contained sets within sets.⁸⁶ This comfortable metaphor of natural-science hierarchy does not describe the more distributed process of political regulation present in the Florentine case. “The state” in Florence was not strong. Indeed ‘private’ social networks so permeated highly participatory republicanism as to render “the state” almost invisible, little more than an arena for contestation.⁸⁷ Indeed once corporate groups were defanged, the Florentine state became even less modular over time. The word ‘heterarchy’ perhaps might be used as a placeholder to describe the distributed mode of multiple-network regulation that emerged after the Ciompi revolt, but this word has no precise technical meaning and so is not analytically helpful. We need new conceptual models to understand distributed systems of regulatory (itself autocatalytic) politics that stand ‘behind’ but operate through the other (now partially dynamically decoupled) autocatalytic reproductions of economics and kinship.

Whatever conceptual model eventually comes to characterize abstractly this Florence-style regulatory framework, it is clear historically that its emergence led to the powerful stabilization of a deeply turbulent system. The politicized networks of marriage, partnership systems and clientelism knit together a ‘structurally cohesive’ (Moody and White) oligarchy at the core of Florentine multiple networks. They also individualized

⁸⁶ See also Pattee (), Wagner and Altenberg (1996), and Schlosser and Wagner (2004).

⁸⁷ Or more optimistically for a “dialogue of power”, in Najemy’s () felicitous phrase.

and made more precise the election and account-book investment channels for social, political and economic mobility into that oligarchy. The oligarchy was stabilized, I argue, because of the new cross-cutting autocatalytic network that was interwoven through the other two. The politically legitimizing and demobilizing consequences of restructured routes for controlled social mobility have been analyzed by Najemy () and by Cohn (), respectively.⁸⁸ Civic humanism and the artistic Renaissance were, if not generated directly, at least permitted and encouraged to evolve, to better foster and display the glory, dignity, honor and accomplishments of Florence and its leading citizens, who molded each other in their intertwined and mutually transformational social-network careers.

⁸⁸ Because of possible misreading of my argument as supporting Burkhardt (), I hasten to add that “individuation” in the network sense of Simmel () is not the same as “individualism” in the psychological sense of Hobbes, Locke or Adam Smith (MacPherson 1962).