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Machiavelli's Possibility Hypothesis

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Abstract This paper discusses the thesis that in Arrow's Possibility Theorem the dictator (merely) serves as a *solution* to the logical problem of aggregating preference while Machiavelli's dictator, the *Prince*, has the historical *function* to bring order into a world of chaos and thus make society ready for the implementation of a republican structure.

Keywords Dictator, aggregation of preferences, republic, democracy

JEL classification B00, B3, B4

1. From Arrow to Machiavelli and back again

The thesis of this paper is that in Arrow's Possibility Theorem the dictator serves as a *solution* to a logical problem while Machiavelli's dictator, the *Prince*, has a historical *function*. This function is bringing order to a society that is characterized by chaos. As a consequence, Arrow's dictator and Machiavelli's *Prince* seem to be very different concepts. However, there is a unifying dimension: the 'one will.' Therefore we argue that by comparing these concepts we might gain a better understanding of what dictators do and what they did and perhaps also why they did it.

While Machiavelli, at great pains, analyzed what circumstances and types of behaviour contributed to the success of the *Prince*, Arrow's dictator is just a map of individual preference ordering into a social one. However, in Arrow's axiomatization, 'non-dictatorship' is a desired property of the map called social welfare function. To Machiavelli's *Prince*, efficiency and stability are objectives that do not only help him to keep his power but also to gain him glory, the final motive for all his striving. For Arrow's dictator an efficient outcome is defined by his own preferences and stability is not an issue as he 'lives' in the timeless world of a static model. In technical terms, Machiavelli is about an evolutionary process and mechanism design while Arrow is about the deficiencies of a mechanism (i.e. voting) when it comes to the aggregation of individual preferences into a (collective) social preference order.

In the next section we will give a critical interpretation of Arrow's theorem, however trivial it seems to be, but also how insidious it is. Section 3 introduces Machiavelli's *principe nuovo*, in short, the *Prince*. In Section 4 we follow the footprints of the *Prince* that may lead from power to stability and efficiency. Section 5 discusses

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Machiavelli's general theory with a focus on his cycle model of history.¹ Section 6 concludes the paper with a reference to the 'metaphysics' in Arrow and Machiavelli. It tries to clarify the ideological positions of the two authors and their motivation to write what we discuss in this paper. While Machiavelli is rather explicit about his objectives, Arrow's *Possibility Theorem* looks as a highly abstract scientific work to most readers. We hope to demonstrate its relevance for the interpretation of Machiavelli's political writing and the understanding of politics proper.

2. The Possibility Theorem

Machiavelli was a republican. However, he was quite aware that the aggregation of individual preferences to form a social preference order does not work if there is 'chaos', and preferences are 'unconstrained' and suffer from intransitivity.² More than 400 years later, Arrow (1963) showed that a social preference ordering, that is to satisfy a few appealing properties, only exists if it is dictatorial, i.e., only if it is identical with the preferences of an individual i , irrespective of what the preferences of the other members of the society are, whether and how they change. A precondition is that the preferences of the dictator i form a transitive, reflexive and complete ordering. "The methods of dictatorship ... are, or can be, rational in the sense that any individual can be rational in his choices." (Arrow 1963, p. 2) However, one of the conditions of Arrow is 'non-dictatorship' so inconsistency is straightforward.

Of course, this problem could be circumvented by dropping one of the other conditions that should be satisfied by the social welfare function that defines the social preference ordering: (i) 'unrestricted domain' which says that none of the possible preference profiles on the given set of alternatives should be excluded; (ii) 'monotonicity' which refers to Paretian efficiency³; (iii) 'independence of irrelevant alternatives', (iv) 'citizen sovereignty' which in Arrow's words implies that the social welfare function is not 'imposed', i.e., it derives from individual preferences. In this case, the social welfare function is a 'process or rule' that maps the set of individual preferences profiles into the set of social preference orderings, both defined on the same sets of alternatives. These alternatives are meant to describe social states. Obviously, voting rules serve as 'real-world' social welfare function. However, inasmuch as, for example, simple majority voting merely determines a winner, and not a preference ordering on all alternatives, it is a social choice function.

Arrow postulates that the social welfare function should satisfy the very same axioms that define individual preference orderings: 'connectivity' and 'transitivity' where 'connectivity' implies both 'completeness' and 'reflexivity' which are standard

¹ Sections 2 to 5 of this paper derive from Holler (2007, 2008, 2009).

² A reviewer pointed out that this sentence sounds like blunt anachronism. We have to admit that Machiavelli could not have used this vocabulary, simply because he wrote in Italian and of course these concepts were as yet not defined. However, his thinking was more modern and much better structured than what followed. See for instance the Anti-Machiavel by Frederick of Prussia (Of Prussia 1981 [1740]), written and published with the 'help' of Voltaire.

³ "Since we are trying to describe social welfare and not some sort of illfare, we must assume that the social welfare function is such that the social ordering responds positively to alterations in individual values." (Arrow 1963, p. 24)

for the definition of an individual preference ordering. Now if the dictator i is rational in the sense that his preferences, however defined and applied, satisfy these axioms, then i is an obvious *solution* to picking a social welfare function that satisfies conditions (i) to (iv) and the axioms of ‘connectivity’ and ‘transitivity’. However, condition (v), ‘non-dictatorship’ is violated.

It is interesting to see that Arrow’s proof of the General Possibility Theorem focuses on the dictator as a non-admitted and contradicting solution, and so did most of the authors that reproduced variations of the proof in the sequel. This, of course, sheds special light on the dictator. However, nothing is said about the conditions that have to be satisfied to implement the dictator’s preferences. For instance, one might argue that implementation is more costly, or presupposes more power, if the dictator’s preferences differ considerably from the preferences found in the population.

Arrow was not concerned about power and will. The implication of his analysis was that the aggregation of preferences in an idealized democratic world can be deficient and policy making cannot rely on a social welfare function that satisfies some nice properties in the form of axioms and conditions. In real life, we have to look for other ways to solve social choice problems. Of course, we have to note that nobody goes to the barricades if the independence of irrelevant alternatives is violated and the social ranking of the social states a and b depends on whether there is an alternative social state c on the agenda or not. Such a result prevails, e.g., if a society relies on simple majority voting and faces a Condorcet Paradox (i.e., the majority cycle).⁴ Moreover, it is easy to show that standard voting procedures such as Borda count and approval voting violate the independence condition.

Starting from this observation it may be concluded either to drop this independence axiom or to take a more radical path and reject the ordinal utility project which is at the heart of Arrow’s theory. With cardinal utilities and adequate rules of interpersonal comparison of utility we avoid the problems of aggregation of preferences as generalized in Arrow’s theorem. Hillinger (2005, p. 295) suggests ‘utilitarian voting’ which allows a voter to ‘score each alternative with one of the scores permitted by a given voting scale’. He finds that in ‘ordinal voting’ scores are unjustifiably restricted. This of course is an interesting aspect because one of the conditions of Arrow’s theorem is unrestricted domain. From Hillinger’s argument, however, follows that there is a (too) strong restriction implicit to the choice of ordinal scales.⁵

In general, however, societies are less concerned about ordinality or cardinality but more explicit in violating the unrestricted domain assumption, i.e., to restrict the set of preference profiles that should be taken into account. A rather radical way to restrict the domain is to exclude individuals and their preferences from the society that is relevant for the aggregation problem. Minors can be viewed as an instance of such

⁴ Arrow (1963, p. 3) illustrates the problem of aggregating preferences by means of majority voting referring to the ‘paradox of voting’. For a discussion of the original presentation of the problem by Marquis de Condorcet and of E. J. Nanson’s elaboration, see Black (1963).

⁵ It is standard to relate the introduction of cardinality with independence of irrelevant alternatives (IIA). If preferences are ordinal it seems rather plausible that an alternative z has no impact on the ranking of the alternatives x and y . However, there is ample empirical evidence that z has an impact on the utility ratio that corresponds to x and y , if cardinal measures are introduced and ratios and differences are defined.

restriction when it comes to voting. Another case is given by felon disenfranchisement. In the State of Iowa almost 35 percent of its African-American population are barred from voting by felon disenfranchisement laws.⁶ “By Election Day 2004, the number of disenfranchised felons had grown to 5.3 million, with another 600,000 effectively stripped of the vote because they were jailed awaiting trial. Nationally, they made up less than 3 percent of the voting-age population, but 9 percent in Florida, 8 percent in Delaware, and 7 percent in Alabama, Mississippi, and Virginia.” (DeParle 2007, p. 35) It seems fair to conjecture that most of these people have preferences that deviate, perhaps substantially, from the preferences of the average US voter. However, whether this restriction of domain stabilizes the U.S. democracy seems questionable, at least in the long run. But, to some extent, it bridges the gorge formalized in Arrow’s theory because it homogenizes the preference profile of the society when it comes to voting.

A less rigorous device of harmonizing preferences is education. In the *Discorsi*, Machiavelli repeatedly pointed out that the functioning of the Roman republic strongly depended on the education of the youth in accordance to widely shared values, including a religion, that were decisive for the success of the community. In ancient Greece, the education of the youth was considered an effective instrument to infuse standards of moral behavior in accordance to the existing social norms. Education supplemented the political institutions. Since the social norms and the political institutions varied substantially among the various city-states—think about Sparta, on the one hand, and Athens, on the other—the education differed as well. (For details, see Bitros and Karayiannis 2010.)

Adam Smith brings forward two major arguments why the public should be interested in the education of the ‘common people’. The first argument is to support or to maintain the martial spirit ‘of the great body of the people’, which is necessary to defend the country and assure the security of its citizens. But education is also necessary to increase the peoples’ power of judgment and resistance against “... the delusions of enthusiasm and superstition, which among ignorant nations, frequently occasion the most dreadful disorder. An instructed and intelligent people besides are always more decent and orderly than an ignorant and stupid one” (Smith 1979 [1776/77], p. 788). This sounds like harmonization by education and insight. However, Smith also acknowledges that citizens develop a more critical view on politics and the politicians. “In free countries, where the safety of government depends very much upon the favourable judgment which the people may form of its conduct, it must surely be of the highest importance that they should not be disposed to judge rashly or capriciously concerning it.” (Smith 1979 [1776/77], p. 788) Perhaps in order to comfort the governing elite, Smith adds, “... due to education, citizens are more disposed to examine, and more capable of seeing through, the interested complaints of faction and sedition, and they are, upon that account, less apt to be misled into any wanton or unnecessary opposition to the measures of government.” Here the government could be interpreted

⁶ In his review, DeParle (2007) refers to Jeff Manza and Christopher Uggen (2006), *Locked Out: Felon Disenfranchisement and American Democracy*, Oxford University Press, p. 248–253, as source. “Disenfranchised felon is a term that encompasses three groups. Some 27 percent are still behind bars. Others, 34 percent, are on probation or parole. And the larger share, 39 percent, are ‘ex-felons’ whose sentences have been served.” (DeParle, 2007, p. 35)

as the ‘shadow’ of a social welfare function that satisfies only one of Arrow’s axioms and conditions: non-dictatorship.

“Aristotle must be turning in his grave. The theory of democracy can never be the same (actually, it never was!) since Arrow,” Paul Samuelson (1972) commented when Arrow was given the Nobel Prize in economics (which in fact is not a Nobel Prize!). Perhaps one should emphasize the “actually, it never was!” William Riker proposes the view that democracy is a set of rules which allows the substitution of one governing elite by another—by means of majority voting. Partly, this is an adequate description of the governmental system of ‘his America’, partly it is his suggestion to get around the aggregation problems hiding in what he calls populism.

In his *Discorsi*, Machiavelli describes how the major two parties, the aristocrats and the plebeians, governed the Roman Republic by compromise that resulted from extensive, explicit or implicit, bargaining. As described by Machiavelli, after *Titus Livius*, “. . . under their republican constitution,” the Romans “had one assembly controlled by the nobility, another by the common people, with the consent of each being required for any proposal to become law. Each group admittedly tended to produce proposals designed merely to further its own interests. But each was prevented by the other from imposing its own interests on the law making. The result was that only such proposals as favoured no faction could ever hope to succeed. The laws relating to the constitution thus served to ensure that the common good was promoted at all times.”⁷ However, third parties were excluded and so was the larger share of the population: women and slaves.

Thus, in both the taking-turns of U.S. democracy and the compromise model of the Roman Republic representation is limited and the sets of relevant preferences seem to be rather constrained. But both systems worked quite efficiently if we take the international success of the corresponding regime as measure rod. Considering world power, the two regimes were even quite often compared to each other. However, both regimes were installed in pre-existing order: the one was colonial while the other traces back to the will of a *principe nuovo* (i.e., a tyrant hero). Therefore, neither the U.S. nor the Roman Republic model can tell us how order emerges from a world of chaos and common standards prevail that restrict the domain.

There is a growing literature that explains the emergence of common standards as a result of an evolutionary process. For example, in two volumes Binmore (1994, 1998) analyzes the condition for the evolution of social norms, more specifically, of justice. It has to be said that to Binmore justice and moral behaviour are a means of co-ordination only: “Just as it is actually within our power to move a bishop like a knight when playing Chess, so we can steal, defraud, break promises, tell lies, jump lines, talk too much, or eat peas with our knives when playing a morality game. But rational folk choose not to cheat for much the same reason that they obey traffic signals.” (Binmore 1998, p. 6) Binmore’s analysis shows substantial game theoretical skill, but it also makes clear that a homogeneous society is just an evolutionary possibility and not a necessary consequence. There is hope, but most likely more than one set of norms will

⁷ This is how Skinner (1984, p. 246) summarizes Machiavelli’s description of the law making institutions of the Republic.

develop and conflict seems unavoidable—if only substantiated as coordination failure.

Machiavelli proposes the *principe nuovo* who combines power and will to solve the coordination problem in accordance with his preferences. To some extent, these preferences can, by and large, be summarized as capturing power and defending it against competitors. However, there is also the expected glory of the founder of a state which seems to add to the power motivation. To qualify for this glory the *principe nuovo* has to stabilize what he has created. This is where social efficiency and the republic enter the scene.

3. The *principe nuovo*

Romulus, mythic founder of Rome, killed his brother Remus in order to avoid sharing power. He also "... consented to the death of Titus Tatius, who had been elected to share the royal authority with him" (*Discourses*, p. 120). In Machiavelli's interpretation, these murders guaranteed that one (and only one) will define the common good. It was the will of the prince, and the prince acted as an Arrovian dictator: if his choices were consistent then the social choices were consistent as well. Here the views of Machiavelli and Arrow converge "In the ideal dictatorship there is but one will involved in choice." (Arrow 1963, p. 2) Of course, it was not Arrow's intention to justify dictatorship, and Machiavelli hopes for a dictator only in the case of disorder and chaos when life is 'solitary, poor, nasty, brutish and short' as one of his 'pupils' suggested.⁸

Machiavelli admits that, given the example of Romulus, "... it might be concluded that the citizens, according to the example of their prince, might, from ambition and the desire to rule, destroy those who attempt to oppose their authority" (*Discourses*, p. 120). However, "... this opinion would be correct, if we do not take into consideration the object which Romulus had in view in committing that homicide. But we must assume, as a general rule, that it never or rarely happens that a republic or monarchy is well constituted, or its old institutions entirely reformed, unless it is done by only one individual; it is even necessary that he whose mind has conceived such a constitution should be alone in carrying it into effect. A sagacious legislator of a republic, therefore, whose object is to promote the public good, and not his private interests, and who prefers his country to his own successors, should concentrate all authority in himself; and a wise mind will never censure any one for having employed any extraordinary means for the purpose of establishing a kingdom or constituting a republic" (*Discourses*, p. 120).

This concurs with Machiavelli's notorious dictum 'the end justifies the means'.⁹ In the case of Romulus, Machiavelli concludes: "It is well that, when the act accuses

⁸ Of course, Thomas Hobbes' 'Leviathan' has close similarities with Machiavelli's *Prince*. The difference is that Hobbes justifies the unrestricted power of the *Prince* by a somewhat naïve idea of a social contract while Machiavelli's *Prince* has to fight to capture and exercise power in order to survive and perhaps gain glory.

⁹ This is the famous translation in the Mentor Edition of *The Prince* (*Prince*, 1952 ed., p. 94). The corresponding lines in Detmold's translation of 1882 are "... for actions of all men, especially those of princes, are judged by the result where there is no other judge" (*Prince*, 1882 ed., p. 49). The latter translation is perhaps less impressive. However, it clarifies that Machiavelli refers to an empirical observation and not to a

him, the result should excuse him; and when the result is good, as in the case of Romulus, it will always absolve him from blame. For he is to be reprehended who commits violence for the purpose of destroying, and not he who employs it for beneficent purposes.” (*Discourses*, p. 120f)

However, in order to be successful, the *Prince*, different from Arrow’s dictator, needs specific qualities. Machiavelli points out that “. . . a prince should seem to be merciful, faithful, humane, religious, and upright, and should even be so in reality; but he should have his mind so trained that, when occasion requires it, he may know how to change to the opposite” (*Prince*, 1882 ed., p. 59). Not surprisingly, Machiavelli concludes: “It is not necessary, however, for a prince to possess all the above-mentioned qualities; but it is essential that he should at least seem to have them. I will even venture to say, that to have and to practise them constantly is pernicious, but to seem to have them is useful.” (*Prince*, 1882 ed., p. 58f) Machiavelli demonstrates that politicians are obliged not to be good, or, as summarized by Walzer (1973, p. 164), “No one succeeds in politics without getting his hands dirty,” quoting the Communist leader Hoederer in Sartre’s play ‘dirty hands’.¹⁰ Hoederer confesses to his young admirer, and potential murderer, Hugo: “I have dirty hands right up to the elbows. I’ve plunged them in filth and blood. Do you think you can govern innocently?” (Walzer 1973, p. 161)

History’s story unfolded and finally the Roman Republic evolved. Machiavelli gave an (efficiency) argument as to why, in the end, the princely government is expected to transform into a republican system if the governmental regime should stay stable over time. In Chapter IX of the *Discourses* we can read: “. . . although one man alone should organize a government, yet it will not endure long if the administration of it remains on the shoulders of a single individual; it is well, then, to confide this to the charge of many, for thus it will be sustained by the many.”

But there is no guarantee that the will of the founding hero to do the public good carries over to the successor. The creation of an appropriate law is one way to implement the pursuance of the public good. Consequently, Machiavelli proposes: “Lawgiver should . . . be sufficiently wise and virtuous not to leave this authority which he has assumed either to his heirs or to any one else; for mankind, being more prone to evil than to good, his successor might employ for evil purposes the power which he had used only for good ends.” (*Discourses*, p. 121)

However, there are cases in which it is hard to believe that the *principe nuovo* used his resources and basket of cruelties for beneficent purposes. And there are cases in which the *principe nuovo* exploited the law instead of giving strength to it. Machiavelli reports that Cesare Borgia made use of his minister Messer Remirro de Orco to gain power and to please the people. “When he [Cesare Borgia] took the Romagna, it had previously been governed by weak rulers, who had rather despoiled their subjects than governed them, and given them more cause for disunion than for union, so that the province was a prey to robbery, assaults, and every kind of disorder. He, therefore, judged it necessary to give them a good government in order to make them peaceful and

normative statement. Throughout this text *The Prince* is quoted from Detmold’s translation as well as from the Mentor Edition. Choices are made after comparing the alternative translations.

¹⁰ Jean Paul Sartre’s ‘les mains sales’ (‘dirty hands’) had its first night at Paris in 1948, arranged by Pierre Valde who was assisted by Jean Cocteau.

obedient to his rule. For this purpose he appointed Messer Remirro de Orco, a cruel and able man, to whom he gave the fullest authority. This man, in a short time, was highly successful, whereupon the duke, not deeming such excessive authority expedient, lest it should become hateful, appointed a civil court of justice in the centre of the province under an excellent president, to which each city appointed its own advocate. And as he knew that the hardness of the past had engendered some amount of hatred, in order to purge the minds of the people and to win them over completely, he resolved to show that if any cruelty had taken place it was not by his orders, but through the harsh disposition of his minister. And having found the opportunity he had him cut in half and placed one morning in the public square at Cesena with a piece of wood and blood-stained knife by his side. The ferocity of this spectacle caused the people both satisfaction and amazement.” (*Prince*, 1952 ed., p. 55)

Note that Cesare Borgia used the law and the camouflage of a legal procedure to sacrifice his loyal minister. Still he was the model of *principe nuovo* to Machiavelli and it was his case that inspired Machiavelli to write *Il Principe*. However, in the end, *fortuna* was not friendly to Cesare. It was *fortuna* which brought about the early death of Cesare Borgia's papal father Alexander VI. Again, it was *fortuna* who blinded him when he supported the election of Julius II as successor of his father. Instead of being a supporter to his ambitious projects, Julius II turned out to be a rival to the power himself.

It seems obvious that Machiavelli expected that the Borgia family would unite Italy under their sword and poison and that the united Italy would transform into a republic, had it become reality and matured like Rome did. It seems quite obvious from the final chapter in *The Prince* that Machiavelli wanted to talk the Medici into another attempt to accomplish the project of an all-Italian state which is strong enough to guarantee peace and order for its citizens—and to fight foreign enemies. More than two hundred years later and north of the Alps, one of the most explicit critics of *Il Principe* and Machiavelli (see fn. 1), turned his principality into a major European power, and thereby laid the foundation of a united Germany under the dominance of Prussia, following a straightforward Machiavellian policy. He is called Frederick the Great despite the fact that he did not try to enhance his glory by transforming his kingdom into a republic. He therefore should be held responsible for the mischief that, later, the *Reich* brought to Europe and to mankind.

4. From power to stability and efficiency

History tells us, and it is stated in the *Discourses*, that the transformation into a republic was not a peaceful event in the case of Rome. On the other hand, it is obvious from Machiavelli's political writings that he believed republics to be the most stable of political institutions. The costs in taking them by force and to establish a princely power are likely to be prohibitive, compared to the capture of power in a principality. “. . . in republics there is greater life, greater hatred, and more desire for vengeance; they do not and cannot cast aside the memory of their ancient liberty, so that the surest way is either to lay them waste or reside in them” (*Prince*, 1952 ed., p. 47).

Efficiency is an argument to reduce limitations and expand the domain: "... the Roman republic, after the plebeians became entitled to the consulate, admitted all its citizens to this dignity without distinction of age or birth. In truth, age never formed a necessary qualification for public office; merit was the only consideration, whether found in young or old men. . . . As regards birth, that point was conceded from necessity, and the same necessity that existed in Rome will be felt in every republic that aims to achieve the same success as Rome; for men cannot be made to bear labor and privations without the inducement of a corresponding reward, nor can they be deprived of such hope of reward without danger." (*Discourse*, p. 221) "And admitting that this may be so with regard to birth, then the question of age is necessarily also disposed of; for in electing a young man to an office which demands the prudence of an old man, it is necessary, if the election rests with the people, that he should have made himself worthy of that distinction by some extraordinary action. And when a young man has so much merit as to have distinguished himself by some notable action, it would be a great loss for the state not to be able to avail of his talents and services; and that he should have to wait until old age has robbed him of that vigor of mind and activity of which the state might have the benefit in his earlier age." (*Discourses*, p. 222) However, Roman history can serve as a good example to illustrate that there is a trade-off between efficiency through participation and consistency in representation. The rise of Julius Caesar and the end of the republic looks like a necessary consequence of this conflict if anarchism should not prevail.

Obviously, there is no conflict between efficiency and consistency in Arrow's world if dictatorship is the solution to the aggregation problem. The dictator will choose the alternative that is the top element of his preference order, of course given feasibility. This is a necessary condition for Pareto efficiency, irrespective of the preferences of the other members of the society. Note that the other members can only improve if the dictator cannot put his top-ranked element into reality. The efficiency that Machiavelli is talking about has to do with growth—enlarging the possibility set of the society. Machiavelli's historical perspective implies a problem of dynamic optimization under uncertainty and Pareto optimality does not (directly) apply.

5. Machiavelli's Possibility Hypothesis

Machiavelli's writings emphasize the dominance of the political sector over all other areas of social life. Law, economy, religion, and art are only accessories, ready to be exploited in the race for power. This perspective, of course, is based on Machiavelli's observation and his profound studies of history. It does not derive from a moral judgement.

It could be argued that there is conflict between the progressive structure of the Machiavelli program and the cyclical view which Machiavelli holds on history: there is growth and prosperity followed by destruction, chaos and possible reconstruction; princely government is followed by tyranny, revolution, oligarchy, again revolution, popular state, and finally the republic which in the end collapses into anarchy waiting for the prince or tyrant to reinstall order (see *Discourses*, p. 101). In his *History of*

Florence we can read: “The general course of changes that occur in states is from condition of order to one of disorder, and from the latter they pass again to one of order. For as it is not the fate of mundane affairs to remain stationary, so when they have attained their highest state of perfection, beyond which they cannot go, they of necessity decline. And thus again, when they have descended to the lowest, and by their disorders have reached the very depth of debasement, they must of necessity rise again, inasmuch as they cannot go lower.” (*History*, p. 218)

Machiavelli concludes: “Such is the circle which all republics¹¹ are destined to run through. Seldom, however, do they come back to the original form of government, which results from the fact that their duration is not sufficiently long to be able to undergo these repeated changes and preserve their existence. But it may well happen that a republic lacking strength and good counsel in its difficulties becomes subject after a while to some neighbouring state, that is better organized than itself; and if such is not the case, then they will be apt to revolve indefinitely in the circle of revolutions.” (*Discourses*, p. 101f) This quote indicates that the ‘circle’ is no ‘law of nature’ although the image is borrowed from nature.¹² There are substantial variations in the development of the governmental system and there are no guarantees that the circle will close again. Obviously, there is room for political action and constitutional design that has a substantial impact on the course of the political affairs. For instance, Machiavelli concludes that “. . . if Rome had not prolonged the magistracies and the military commands, she might not so soon have attained the zenith of her power; but if she had been slower in her conquests, she would have also preserved her liberties the longer” (*Discourses*, p. 388). We see that, despite his cyclical view of the world, Machiavelli considered political action and constitutional design as highly relevant for the course of history and also for what happens today and tomorrow. However, the cyclical view allows us to learn from history and apply what we learned today and in the future. Machiavelli repeatedly suggests that his contemporaries should study the Romans and learn from them. In fact, it can be said that he has written the *Discorsi* to serve mainly this purpose. Also in *The Prince* he advises Lorenzo, the addressee of this very book, that it will not be ‘very difficult’ to gain power in Italy and to redeem the country of the barbarous cruelty and insolence of the foreigners if he calls “. . . to mind the actions and lives of the men” that he gave him as examples: Moses, Cyrus, and Theseus (*Prince*, 1952 ed., p. 125). “. . . as to exercise for the mind, the prince ought to read history and study the actions of eminent men, see how they acted in warfare, examine the uses of their victories and defeats in order to imitate the former and avoid the latter, and above all, do as some men have done in the past, who have imitated some one,

¹¹ The German translation is ‘die Regierungen aller Staaten’ (Machiavelli 1977, p. 15), i.e. ‘the governments of all states’, which is perhaps more adequate than to address the republic only.

¹² Kersting (2006, p. 61f) contains arguments that imply that Machiavelli relied much stronger on the circle principle than we propose here. Human nature does not change. It wavers between selfish creed and ruthless ambition, on the one hand, and the potential to strive for the common good, on the other. Depending on the state of the world, we find that the one or the other inclination dominates in frequency and success. There is also the possibility of the ‘uomo virtuoso’ who, supported by fortuna, will lead his people out of the lowlands of anarchy and chaos. The result of this potential and the alternative inclinations is a cyclical up-and-down which sees tyranny and free state as turning points but still contains enough leeway for the formative power of virtù and fortuna.

who has been much praised and glorified, and have always kept his deeds and actions before them, as they say Alexander the Great imitated Achilles, Cesar Alexander, and Scipio Cyrus” (*Prince*, 1952 ed., p. 83).

6. The Machiavelli project

A central hypothesis of this paper is that the target of Machiavelli’s political writings was the *renaissance* of the Roman Republic in 16th century Italy in the form of a united national state. There are straightforward indicators of this agenda in *The Prince*. In finalizing Chapter 26, Machiavelli directly addresses the governing Medici: “It is no marvel that none of the before-mentioned Italians have done that which it is hoped your illustrious house may do” (*Prince*, 1952 ed., p. 125). “May your illustrious house therefore assume this task with that courage and those hopes which are inspired by a just cause, so that under its banner our fatherland may be raised up ...” (*Prince*, 1952 ed., p. 107). However, a unification of Italy under the umbrella of a ‘princely’ family is just the first step in the Machiavelli program. As we shall see below, it was meant to be part of an evolutionary process which, at some stage, could lead into a, more or less, stable republican system.

Machiavelli dedicated the text of *The Prince* to Lorenzo the Magnificent, Son of Piero di Medici.¹³ This dedication has been interpreted as Machiavelli’s attempt to gain the favour of one of the powerful Medici “... in the hope that they might invite him back to public service” (Gauss 1952, p. 11). This interpretation seems to be widely accepted and probably contains some truth, too. However, another interpretation is possible. In the context of his program, it can also be interpreted as an attempt to initiate a second go at creating a united Italy under the rule of the Medici to guarantee peace and order. In a letter to his friend Francesco Guicciardini, Machiavelli suggested the Condottiere Giovanni de’Medici, the notorious della Bande Nere, as liberator of Italy.¹⁴ However, this Giovanni was deadly wounded in a battle already in 1526. This was years after Machiavelli saw Cesare Borgia failing in his endeavours to conquer substantial parts of Italy and to resist the claims and the power of the vassals and followers of the French and Spanish Crown and of the German Emperor who divided Italy like a fallen prey. Machiavelli maintained that, despite rather masterful precautions, Cesare Borgia was defeated by *fortuna*. It was *fortuna* that brought about the early death of Cesare Borgia’s papal father Alexander VI. Again, it was *fortuna* who blinded him when he supported the election of Julius II as successor of his father. Instead of being a supporter to his ambitious projects, Julius II turned out to be a rival to the power himself.

The Machiavelli program becomes evident when we compare the Roman history

¹³ Lorenzo the Magnificent is the grandson of the Lorenzo di Medici who died in 1492 and entered history books as *The Magnificent*. His grandson died 1519, too early to fulfil what Machiavelli hoped for. However it is not evident that the ‘new’ Lorenzo ever had a chance to look at Machiavelli’s text (see Gauss, 1952, p. 11).

¹⁴ Francesco Guicciardini later became the highest official at the papal court and even first commander of the army of the Pope. He remained a friend to Machiavelli till the latter died, but did often not support his plans and ideas (see Zorn 1977, p. XXXVIII. and LIX.)

as interpreted in the *Discourses* with the facts which we learn about Cesare Borgia as written down in *The Prince*. In both cases we have an extremely cruel beginning in which the corresponding 'heroes' violate widely held norms of the 'human race'. It has been argued that Machiavelli's choice of Cesare Borgia, also called the *Duke*, to become the hero of *The Prince*, was a grave error from the standpoint of his later reputation as: "Cesare had committed crimes on his way to power, and it might be added that he had committed other crimes too." (Gauss 1952, p. 12f) It seems that Machiavelli had foreseen such a critique and writes in *The Prince* (*Prince*, 1952 ed., p. 57): "Reviewing thus all the actions of the Duke, I find nothing to blame, on the contrary I feel bound, as I have done, to hold him up as an example to be imitated by all who by fortune and with the arms of others have risen to power."

7. Conclusion

What can Machiavelli tell us? Italy is united. It is more bureaucratic than chaotic. No dictator is needed. But, of course, the republic has to be on its guard. In the *Discourses*, Machiavelli demonstrated that a republic can embody strong forces that lead to its success but, at the same time, to its resolution into chaos. Then, Machiavelli's message is that it needs the strong and unbiased will of a dictator to bring about order. The dictator tries to stabilize power and, to gain him the glory, will introduce institutions that, in the end, prepare for the establishment of a republic.

For Machiavelli, the dictator has a historical function while for Arrow the dictator is a possible solution to a logical problem. The *Possibility Theorem* stands out as highly significant scientific result and it won its author a Nobel Prize. The fact that it was often discussed as *Impossibility Theorem*, demonstrating that a democratic aggregation of preferences does not always work the way it should, did not irritate too much as democracy was by and large identified with the competition of political parties or presidential candidates, and not with the aggregation of preferences.¹⁵ More recently, there is a discussion about the political and ideological condition that Arrow faced when he did his pioneering work.¹⁶ Whatever the background of Arrow's Theorem is it has helped to clarify problems of aggregating preferences. The message is that the aggregation does not work if we choose Arrow's ordinal scheme and ask the social preference function to satisfy some reasonable properties. Our hypothesis is that this was already understood by Machiavelli as we can derive from his *Discorsi* and, more obviously, from *Il Principe*.

¹⁵ See Riker (1982) but also the public choice literature that refers to Downs (1957). Obviously, Downs was influenced by Schumpeter (1950) who proposed the model of political competition. It should be noted that already in his 'Stability in Competition', Hotelling (1929) discussed the median voter model.

¹⁶ In the 'Acknowledgements' of the first edition of his book, and reprinted in the second, Arrow informs the reader that his "... study was initiated" while he was "... on leave from the Cowles Commission as a consultant to The RAND Corporation, which is engaged in research under contract with the United States Air Force." Amadae (2003, p. 10) claims that it "... is no exaggeration to say that virtually all the roads to rational choice theory lead from RAND. This observation draws attention to its role as a quintessential American Cold War institution, and in turn to the Cold War motives that underlay much of the impetus propagating rational choice theory." (See Hillinger 2008, Holler and Marciano 2010 and Mirowski 2002 for a discussion of this argument.)

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